A STUDY OF THE EFFECTIVENESS OF DIFFERENTIATED ASSIGNMENTS IN TEACHING FOURTH GRADE GEOGRAPHY IN THE VALENA C. JONES SCHOOL OF NEW ORLEANS, LOUISIANA

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CHAPTER I

INTRODUCTION

Statement of Problem.--This experiment is a comparative study of the values of differentiated assignments in the teaching of fourth grade Geography in the Valena C. Jones School of New Orleans, Louisiana.

Setting of Study.--The Valena C. Jones School is located in the downtown section of New Orleans, Louisiana. It is one of the largest public elementary schools for Negroes in the city. Its enrollment averages about one thousand five hundred. The faculty consists of forty-eight members and the school comprises a nursery and the first seven grades. Within each of the seven grade divisions, however, there are about six classes. Under the progressive leadership of the principal, Fannie C. Williams, the faculty has endeavored to maintain high standards of education through research and use of improved methods of instruction. About ninety-nine per cent of the faculty members have completed their baccalaureate work in either local universities or universities away from the city. Others, including the principal, have completed or are still doing graduate work at the following institutions: University of Michigan, University of Iowa, University of Southern California, Juillard School of Music and Atlanta University. Recently the school has witnessed some curriculum revision as the result of the Louisiana Program for the Improvement of Instruction. Among these were the reorganization of the subject-matter content and change of textbooks in social studies for the fourth grades. Units of work with subject-matter that was different from previous years were issued by the school board. The curious desire to use this new material in experimenting with a "new type" assignment and the influence of the school situation, imbued the investigator with the idea of

conducting this study. The results will be utilized for personal modifications in an effort to improve the investigator's own teaching technique.

Trends in Differentiated Assignments.--Methods of making assignments have changed since the beginning of the nineteenth century.

> Up to the beginning of the nineteenth century assignments for school work were influenced by the method of individual assignment which was employed in most schools. Each pupil had his individual assignment and advanced to the teacher's desk for his turn to recite. When school enrollments began to increase, it became obvious that this method was impractical as well as a waste of time. As an alternative schools were organized to give mass instruction.[1]

In more recent years the attention of educators has been directed back toward recognition of individual differences. The differentiation of assignments to fit the needs, capacities and interests of individual pupils is one of the developments in this direction.

> The widespread use of intelligence tests and achievement tests during the past years has made every educator realize forcefully that children vary greatly as individuals and that any one school grade contains children of an astonishingly wide variety of capacity and achievement....The question most frequently asked is, How can one instruct children "en mass" and at the same time individualize?[2]

E. L. Thorndike and others have done much through the administering of tests to reveal to the educational public the differences in capacity for learning.

> Since 1910, however, the publications of eminent psychologists, such as E. L. Thorndike, and the wide use of mental tests in diagnosing the abilities of pupils to learn in different fields have familiarized the educational public with the importance of the problem to such an extent that at the present time the exact scientific study of individual differences and the differentiation of instruction to adapt it to differences in capacity are among the most popular educational movements of the day.[3]

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[1]William G. Carr and John Waage, The Lesson Assignment (California, 1931), p. 29.

[2]Guy W. Whipple, editor, The Twenty-Fourth Yearbook of the National Society for the Study of Education (Bloomington, 1929), p. x Introduction.

[3]Samuel C. Parker, "Adopting Instruction to Differences in Capacity," Elementary School Journal, XXV (September, 1924), 20-30.

Cyrus Mead gives a summary of the changed assignment in the new school and the part which must be taken by the teacher. He says that:

> The new school has certainly wrought changes in the lesson assignment, although the assignment has by no means been discarded. One might be justified in stating that progressive ideas and methods in general have really dignified an old technique and discipline. "Contracts", with very definite bills of particulars to be mastered are now accepted by pupils. "Outline" or "unit plans" guide the class through larger groupings of materials. "Problem" assignments imply the practice of searching through a variety of sources for relevant materials which are to be applied to the solution of a particular difficulty....The lesson assignment may play a very important part in the learning process and to be of value, it must be given serious time on the part of the teachers.[4]

From the foregoing reports it can be clearly seen that much attention has been given to the subject of differentiated instruction.

Purpose of Study.--This experiment was conducted to discover the relative effectiveness of differentiated assignments on achievement in geography in the Valena C. Jones School of New Orleans, Louisiana.

Limitation and Scope of Problem.--The problem was limited to two fourth grade classes in the Valena C. Jones School. Each class consisted of twenty-eight members. Each class was taught forty minutes each day for sixteen weeks. The assignments were taken from the basic text and units of work prescribed by the Orleans Parish School Board, supplementary geography books and the teacher's judgment.

Literature Pertinent to Study.--In reviewing the literature, it was found that two types of literature were pertinent to this study. One consisted of those types of experimental investigations which concern themselves with the effectiveness of two methods of teaching, and the other some organized efforts to improve teaching through differentiated assignments. Among

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[4]Cyrus D. Mead, "Scaling and Improving the Lesson Assignment," Elementary School Journal, XXXIV (November, 1933), 194-202.

the experimental studies read, the procedure and development of two were of great assistance in the organization of this paper. One was a comparison of two methods made at the University of Minnesota.[5]

> During the year 1932-1933 a study was carried out in the University of Minnesota High School to compare the achievement of pupils under two methods of instruction. Two types of instruction used were what is commonly termed an individual method and an individualized group method. The pupils comprising the groups were two ninth grade algebra classes ....The pupils in the two groups were matched according to: (1) intelligence quotient; (2) achievement during the first five weeks....In the group taught by the individual method of instruction the students were allowed to proceed at their own rate. The text was divided into two units each covering approximately one weeks work....The teacher spent his time during the class period explaining errors on tests taken the previous day and helping students. The pupils taught by the group method used the same text and tests as the section described above. At the beginning of the sub-unit an assignment was made for the group with a date set at which it was to be completed.[6]

The following were among the conclusions drawn as a result of the conditions described in the foregoing experiment.

> 1. Students with superior ability attain a higher standard of achievement under the group method of instruction than do like students under the individual method.
> 2. Students with low ability achieve better when taught by the group method than do similar students taught by the individual method.
> 3. Slower progress is made by the pupils taught under the individual method than by those taught under the group method.
> 4. Students in the section taught by the group method of instruction achieve consistently higher on tests given throughout the year.[7]

The appealing characteristics of this investigation are its technique and procedure.

Another study to evaluate the effectiveness of two methods was conducted at LeMoyne College.[8] The following excerpt from the summary of findings from

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[5]Richard Drake, "A Comparison of Two Methods of Teaching High School Algebra," Journal of Educational Research, XXIX (September, 1935), 12-16.

[6]Ibid.

[7]Ibid.

[8]Henry C. Hamilton, "An Experimental Study of Factors Conditioning the Effectiveness of College Orientation Courses." Unpublished Doctor's Dissertation, Teachers College, University of Cincinnati, 1937.

related literature suggest excellent information as to methods generally used in investigations for testing methods:

> The technique in general use for evaluating the effectiveness of different methods of instruction involves: (a) the formation of experimental and control groups equated on the basis of intelligence test scores in conjunction with some other factor such as achievement test scores, semester grades, quality points earned, etc.; (b) the control of all factors and the application of a single variable; (c) finding the differences in gain made between initial and final test scores; (d) determination of the reliability of the difference found; and (e) conclusions based on an evaluation of these results in terms of the critical ratio, experimental coefficient, chances in one hundred, per cent superiority odds, or some combination of these.[9]

The procedure as described also indicated some points which could be helpful in other similar studies.

> The Procedure.--For the purpose of the study, the freshmen at LeMoyne College during the year 1935-36 were grouped into two sections of eighty students each. From these fifty-nine pairs, equated on the basis of intelligence and high school achievement test scores, were selected for the final study. For the students in Section I, the lectures on the different areas were presented by specialists; for the students in Section II, all of the lectures were presented by the same individual.[10]

Ideas gained from the report of the statistical technique employed were also helpful.

> The reliability of the initial and final test was found by the method of self-correlation and the application of the Spearman prophecy formula. The general procedure for the comparisons of the equated groups involved the calculation of the mean, standard deviation, correlation coefficients, reliability of the mean, standard error of the difference, critical ratio, and the chances in one hundred of a real difference.[11]

Among the major findings summarized, it was stated that:

> The results indicated that there is no significant difference

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[9] Ibid., p. 20.

[10] Ibid., p. 25.

[11] Ibid., p. 26.

> in the achievement attained in the two different sections as a result of the two different procedures for the presentation of the lectures.[12]

Experimental studies such as the two just described are very important and significant to this investigation because of the similarity of the problem involved. Their procedure for reporting results and statistical interpretation of data are most pertinent to this study.

There is also some degree of relationship between this study and the reports of school curriculums that have been organized for differentiated assignments. The first plan of differentiated assignments in the school curriculum to be discussed is the Dalton Plan.

Helen Parkhurst began the Dalton Laboratory Plan in the High School of Dalton, Massachusetts, in February of 1920.[13] According to G. A. Yoakam[14] the essential elements of this plan are the organization of subjects into units of work, the use of contracts, or work sheets and the provision for making the student responsible for the distribution and use of his own time. He gives the principles of the plan in the following way:

> There are but three fundamental principles, viz., first, freedom; second, cooperation and group life or community living; and third, the proportion of effort to attainment, or budgeting time.[15]

The feature of the Dalton Plan which lends itself to differentiated assignment more closely is the division of the work into jobs. These assignments are made from the standpoint of individual differences. The pupils are

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[12] Ibid., p. 102.

[13] Helen Parkhurst, Education on the Dalton Plan (New York, 1922), pp. 15-16.

[14] Gerald A. Yoakam, The Improvement of the Assignment (New York, 1934), p. 219.

[15] Ibid.

allowed to budget their time as they see fit.[16]

The improvement of this type of assignment over the old comes in the use of contracts. This idea is conveyed by Guy Whipple[17] in his discussion of the Dalton Plan.

Another school plan which was of interest to the investigator is the Winnetka Plan. It was worked out in the public school system of Winnetka, Illinois, by Carleton W. Washburne.[18] It has proved that school work can be adapted to individual differences through the exercise of children's interest and abilities. The following quotation suggests how the curriculum under this plan is differentiated to meet the needs and abilities of the pupils:

> The curriculum is divided into two parts. One deals with knowledges and skills of which everyone alike needs mastery. The other part provides for each child self-expression and the opportunity to contribute to the group something of his own special interests and abilities....Under the first head, come the common essentials--the three R's and similar subject matter....Since every child needs these things and since every child differs from others in his ability to grasp them, the time and amount of practice to fit each child's needs must be varied....The part of the curriculum which should provide self-expression and group activities is quite another matter. Here there is no common skill or knowledge to be mastered. Here each child may legitimately differ from his neighbor in what he gets from school. It is the school's job to provide opportunities for special interests and abilities to develop....During the time devoted to individual work in common essentials, every child does his own job....The teacher, under this plan spends her whole time teaching, not listening to recitations. She helps an individual here or a group there; she encourages and supervises. She is about among the children as they work, not at her desk.[19]

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[16] Ibid.

[17] Guy Montrose Whipple, op. cit., pp. 77-82.

[18] Ibid., pp. 77-82.

[19] Ibid., pp. 77-82.

The University of Chicago High School has attempted to reach its individuals by means of differentiated assignments. Definite amounts of work are laid out for the class as a whole to cover thoroughly within a definite time. Pupils who acquire control over the material required sooner than others are advised to do additional reading from material suggested by the instructor.[20]

> The classroom then becomes a workshop in which the instructor is the director. Individual differences soon assert themselves, for pupils assimilate content material at very different rates. Students who acquire an understanding of the essentials rapidly and master their materials without reteaching and repeating work may complete a unit several days in advance of the majority of the class. Such students undertake supplementary projects from the list provided or of their own selection. The project is usually determined by the intellectual interests which the pupil has developed in his study of the unit.[21]

The experiment in differentiated assignments in the Wisconsin High School

> has been the building of assignments on various levels of integrating difficulty....Mastery indeed is the key-note of this procedure, yet a new polarity is sought in initiative, cooperative and creative mastery; attitude and companionship of the intellectual life are not disregarded. Much of the time saved from formal recitation, for instance, is used in oral reading of literature by teachers or pupils....Pupils who have mastered a unit of work are constantly encouraged to turn back and help slower ones. They learn to do this not by telling answers, but by asking questions which lead to solutions, for all know that a mastery which can meet fair and searching tests is the only goal.[22]

Summary of Chapter.--This is a comparative study to determine the values of differentiated assignments. Trends in school assignments have been toward meeting individual differences through differentiated assignments. Some experimental investigations of effectiveness of two methods have been helpful

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[20] Ibid., ideas in this paragraph.

[21] Ibid.

[22] Ibid., pp. 52-53.

in suggesting development and technique of other studies. Finally, some endeavors to organize school programs around differentiated assignments have been quite successful. Four outstanding curriculums are the Dalton and Winnetka Plans and those of the University of Chicago High School and the Wisconsin High School.

CHAPTER II

METHOD OF PROCEDURE

Description of Groups.--For the purpose of the study, two fourth grade classes at Valena C. Jones Elementary School were selected during the early part of the second session of the year 1943-1944. In the beginning, Group A and Group B consisted of forty-seven members each. The two groups were matched on the basis of the results of the Otis Group Intelligence Scale. In order to obtain two groups as nearly equal as possible, twenty-eight members of each group were selected. There were fourteen boys and fourteen girls in Group A and eleven boys and seventeen girls in Group B. The means for the I. Q.'s of the two groups were 94.64 and 90.98 respectively. The standard deviations of these means were 9.01 and 8.87. Group A slightly exceeded Group B by 3.66 points. As the study developed Group A and Group B were called Group A/1 Experimental and Group B/1 Control and Group B/2 Experimental and Group A/2 Control.

Purpose of Tests.--The tests used were the Otis Group Intelligence Scale Primary Examination: Form A and the Gregory-Hagerty Geography Test for Grades 4, 5, and 6: Forms A and B. The intelligence scale was used for the purpose of obtaining the I. Q.'s of the individuals in each group in order to use this as a basis for equating the groups. Form A of the Gregory-Hagerty Geography Test was given as an initial measurement to ascertain the background of the groups in geography. Form B of the Gregory-Hagerty Test was used as an intermediate test, so as to find out what gains had been made by the groups as a result of the first period of teaching by the two methods. The scores of the intermediate tests were compared with those of the initial test. Form A of the Gregory-Hagerty Geography Test was re-administered as

a final test for the purpose of discovering the gains made by the groups as a result of the second period of instruction. The results of this test were compared with the results of the intermediate test.

Explanation of Procedure.--The experiment was started with the administering of the intelligence test on February 9, 1944. This was followed by the initial geography test. The two groups were then equated. For eight weeks following this, the two groups were taught. During this first period of teaching, Group A/1 Experimental was taught by the method of differentiated assignments. It was taught for forty minutes each day. The experimental factor used with this group was to allow its members the freedom of choosing the assignments which they desired to complete for the week. These weekly assignments were taken from the text, units of work and other sources. They were prepared by the teacher. At the beginning of each week, the assignments were written on the blackboard. After proper motivation and setting of the stage by the experimenter, the children were permitted to read through the list of assignments and select the ones which were appealing to their interests and capacities. When the pupils had made their choices, the class periods which followed for two and sometimes three days were devoted to the working out of these activities. During these periods, the teacher gave assistance to individuals who found difficulty in completing their tasks. The assistance was in the form of helping pupils to find answers to questions, to draw maps, to make paragraphs, to make other illustrations besides maps, to look up difficult terms, to construct, etc. At the end of each week, the pupils reported their findings to the class. The reports were made so that all members of the group could benefit by the individual assignments. When the reports were made, the class created the audience situation and commented, made additions and held general discussions at the end of each individual contribution.

On the other hand, Group B/1 Control was taught by the class assignment method for this first period of the investigation. It was instructed for forty minutes each day and by the same teacher as that of the other group. The assignments presented to this group were the same as those presented to the other group. Group B/1, however, did not have the freedom of choosing its assignments. All assignments carried out in this group were selected by the teacher. The number of activities attempted daily by the group and the method of developing these activities were determined by the teacher. The whole class worked on one and the same assignment at a time. Class assistance was given by the teacher in the form of direction and guidance of the group through the proper steps involved in developing each assignment. The essential experimental difference in the procedure of the two groups was the opportunity of choosing assignments extended to the experimental group and not to the control group.

At the expiration of eight weeks, the two groups were given Form B of the Gregory-Hagerty Geography Test and rotated. Group A/1 Experimental became Group A/2 Control and Group B/1 Control became Group B/2 Experimental. Figure 1 shows the experimental design for conducting the differential teaching program in geography with the fifty-six fourth grade pupils. After the groups were reversed, they were taught for eight more weeks, as had been done in the first period. Group B/2 Experimental used the differentiated assignments and Group A/2 Control employed the class assignment method. At the end of sixteen weeks the experiment was terminated with the administration of the final test.

The subject matter taught during the experiment was taken from some of the units of work for the fourth grade. The units worked out in the study were: "The Amazon Basin", "The Earth and Map", "Some Cold Dry Countries",

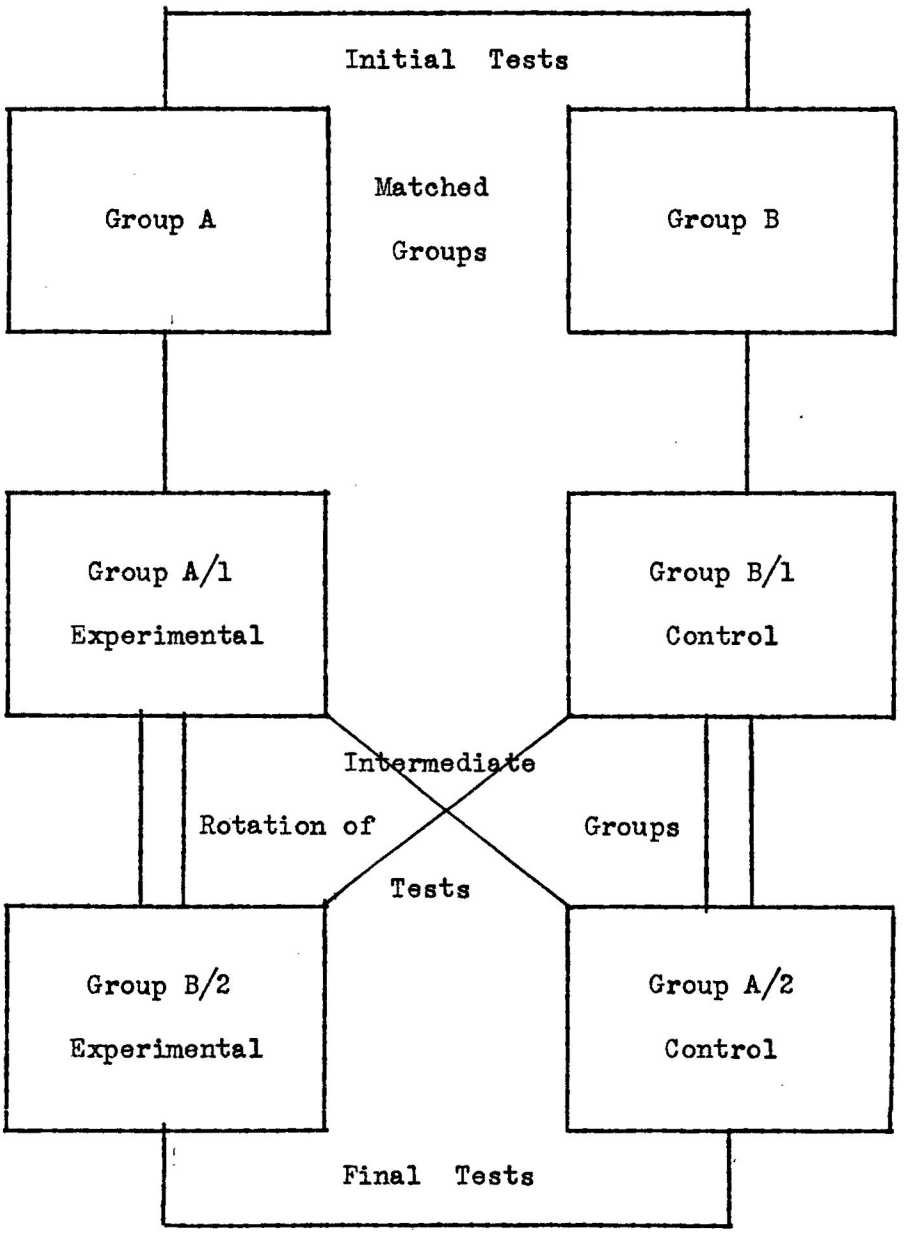

Figure 1.--Experimental Design for Conducting a Differential Teaching Program in Geography with 56 Fourth Grade Pupils

"Hot Dry Lands", and "Countries of the Mediterranean." Assignments for these units are worked out in the basic text, World Folks by J. Russell Smith.[1] Some of the assignments were taken from the lists that came with the units. The topics under these units around which activities were developed were: Directions, Shape of the Earth, Islands, Continents, Hemispheres, Zones, Seasons, Oceans, Poles, Longitude, Latitude, The United States, Greenland, Alaska, The Amazon River, Brazil, Switzerland, Holland, Italy, Greece, and Egypt. Many other sources were utilized in developing the assignments.

Summary of Chapter.--The groups used were two fourth grade classes at the Valena C. Jones School of New Orleans. They were equated on the basis of the results of the Otis Group Intelligence Scale. Before being matched, they were called Group A and Group B. After matching Group A became Group A/1 Experimental and Group B became Group B/1 Control. The tests used were the Otis Group Intelligence Scale, Primary Examination: Form A and the Gregory-Hagerty Geography Test for Grades 4, 5, and 6: Forms A and B. The intelligence test was used as a basis for equating the groups. The initial geography test, Form B, was given for the purpose of discovering the geography achievement already made by the pupils. The intermediate test was administered for the purpose of comparing gains made from the initial to the intermediate tests, after the first period of instruction. The final test was given for the purpose of comparing gains made by the group during the second period of instruction. The study was started with the administering of the intelligence test on February 9, 1944. The initial geography test was given. The groups were equated and for the first eight weeks Group A/1

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[1]J. Russell Smith, World Folks, fourth edition (Philadelphia, 1939).

Experimental was taught by the method of differentiated assignment involving choices and Group B/1 Control was taught by the method of class assignments without choice. At the end of eight weeks, the intermediate test was given and the two groups were rotated. Group A/1 Experimental became Group A/2 Control and Group B/1 Control became Group B/2 Experimental. Teaching by the two methods went on for eight more weeks. When the study had been conducted for sixteen weeks, the final geography test, Form A, was administered to the two groups.

Subject-matter taught in the study was taken from the fourth grade units of work, the basic text and other sources.

CHAPTER III

INTERPRETATION OF DATA

Objective of Test.--The objective of the initial test was to ascertain the achievement in geography which the pupils had made before instruction. The purpose of the intermediate test was to discover the gains, made by the two groups as a result of instruction from the time of the initial to the intermediate test. The objective of the final test was to determine the gains made as a result of the last period of instruction.

Explanation of Statistical Technique Employed.--Comparisons were made of the gains attained by the groups after each period of teaching as were indicated by the tests administered. In treating the data, the means of the scores of each test were obtained. From these scores the means of the gains for each method were computed. The mean of the sum of the gains for each method was also computed. Finally, the mean of the difference in gains of the two procedures was obtained. The variability was determined by finding the standard deviation which is the measure of dispersion for the middle two thirds. The difference between the means was ascertained by finding the critical ratio, the ratio of the obtained difference and the standard error of the difference. Since difference between means may be due to chance, the critical ratio for the difference in gains at the end of the study was also computed. The coefficient of correlation between the gains under the control and the experimental method was also obtained. Sources used for ideas in statistics were Garrett,[1] Peters,[2] Guilford,[3] and Nelson.[4]

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[1] H. E. Garrett, Statistics in Psychology and Education (New York, 1938).

[2] C. C. Peters and W. Voorhis, Statistical Procedures and Their Mathematical Bases (New York, 1940).

[3] J. P. Guilford, Fundamental Statistics in Psychology (New York, 1942).

[4] M. J. Nelson and E. C. Denny, Statistics for Teachers (New York, 1940).

Results under Control Method.--Table 1 shows the means, gains, sum of gains, and other statistics of the control group for both periods of the geography experiment. It shows the comparative results of the tests after the two periods of teaching by the class assignment method. An analysis of the table indicates that there was an increase for Group B/1 Control of 9.46, from the initial test to the intermediate measurement. The mean was 16.60 and the sigma was 7.60. The mean of the intermediate test was 7.48. The gain was 9.46. The sigma of the gain was 5.04. When the final scores and the intermediate scores for Group A/2 Control were compared, the gain was 13.71. The sigma was 10.15. The mean for the intermediate test of Group A/2 Control was 28.89 and the sigma was 8.78, but on the final test the group went up to 42.60 with 9.75 for the sigma. The mean for the sum of the gain for the control method was 23.17. This seems to indicate that the method of class assignments was significantly effective, since the critical ratio of 13.64 insures complete reliability. A further analysis of this data reveals that the gain was constant with these groups. With the exception of two individuals in the last period of instruction, all pupils made some gain. The greater progress, however, was made in the second period of instruction. Students of relatively high intelligence and students of relatively low intelligence made high gains as a result of this method; however, the student in each group whose gain was largest was of relatively low intelligence. Hence, this method seems to have been quite effective, judging from the gain of 23.17.

Results under Experimental Method.--Table 2 summarizes the results of the experimental method as seen from the tabulation of the test scores. It shows the means, gains, sum of gains, and other statistics of the experimental group for both periods of the geography experiment. The mean of the

TABLE 1

MEANS, GAINS, SUM OF GAINS, AND OTHER STATISTICS OF THE CONTROL GROUP FOR BOTH PERIODS OF THE GEOGRAPHY EXPERIMENT

PAIR Number	Group B/1 - Control			Group A/2 - Control			Sum of Gains
	Initial Score	Intermediate Score	Gain	Final Score	Intermediate Score	Gain	
1	13	25	12	62	46	16	28
2	16	18	2	43	24	19	21
3	11	13	2	46	19	27	29
4	18	30	12	32	19	13	25
5	14	24	10	49	29	20	30
6	22	28	6	50	37	13	19
7	14	32	18	47	40	7	25
8	15	26	11	40	30	10	21
9	30	41	11	44	31	13	24
10	18	29	11	45	18	27	38
11	13	29	16	28	25	3	19
12	24	33	9	44	31	13	22
13	13	23	10	37	26	11	21
14	15	28	13	25	34	- 9	4
15	6	23	17	60	40	20	37
16	13	16	3	37	39	- 2	1
17	25	36	11	51	23	28	39
18	37	46	9	45	37	8	17
19	16	21	5	62	29	33	38
20	22	34	12	37	14	23	35
21	21	23	2	49	42	7	9
22	13	20	7	44	38	6	13
23	18	25	7	40	32	8	15
24	1	24	23	30	16	14	37
25	15	25	10	35	30	5	15
26	12	15	3	36	16	20	23
27	11	17	6	49	25	24	30
28	19	26	7	26	19	7	14
Means	16.60	26.06	9.46	42.60	28.89	13.71	23.17
Sigmas	7.60	7.48	5.04	9.75	8.78	10.15	10.07
Errors Standard	1.44	1.41	0.95	1.84	1.66	1.92	1.70
Critical Ratios	11.52	18.48	10.46	23.15	17.39	7.35	13.64
Chances in 100	Complete			Reliability			

TABLE 2

MEANS, GAINS, SUM OF GAINS, AND OTHER STATISTICS OF THE EXPERIMENTAL GROUP FOR BOTH PERIODS OF THE GEOGRAPHY EXPERIMENT

PAIR Number	Group A/1 - Experimental			Group B/2 - Experimental			Sum of Gains
	Initial Score	Intermediate Score	Gain	Final Score	Intermediate Score	Gain	
1	31	46	15	24	25	- 1	14
2	7	24	17	37	18	19	36
3	15	19	4	19	13	6	10
4	17	19	2	48	30	18	20
5	11	29	18	36	24	12	30
6	25	37	12	37	28	9	21
7	31	40	9	47	32	15	24
8	16	30	14	33	26	7	21
9	27	31	4	39	41	- 2	2
10	15	18	3	25	29	- 4	- 1
11	22	25	3	37	29	8	11
12	19	31	12	54	33	21	33
13	23	26	3	30	28	2	5
14	6	34	28	24	23	1	29
15	31	40	9	26	16	10	19
16	20	39	19	58	36	22	41
17	14	23	9	68	46	22	31
18	25	37	12	27	23	4	16
19	26	29	3	27	21	6	9
20	14	14	0	28	34	- 6	- 6
21	20	42	22	22	23	- 1	21
22	22	38	16	28	20	8	24
23	17	32	15	49	25	24	39
24	18	16	- 2	25	24	1	- 1
25	23	30	7	24	25	- 1	6
26	19	16	- 3	34	15	19	16
27	31	25	- 6	37	17	20	14
28	8	19	11	29	26	3	14
Means	19.74	28.88	9.14	34.71	26.07	8.64	17.78
Sigmas	7.08	8.78	8.01	11.69	7.48	8.07	12.20
Standard Errors	1.34	1.66	1.51	2.21	1.41	1.55	2.07
Critical Ratios	14.73	17.39	6.05	11.18	18.48	5.57	8.08
Chances in 100	Complete			Reliability			

initial test for Group A/1 Experimental was 19.74. When this is contrasted with the mean of the intermediate test scores, after the first period of the application of the experimental method, it is revealed that there was a gain of 9.14 points. The sigma of this mean is 2.01 and the standard error is 1.51. The gain in the second period of instruction by the experimental method was smaller than the gain in the first period. This is indicated by the means of 9.14 in the first period and 8.64 in the second. However, the sum of gains was 17.78 which showed that despite the loss, there was a fair gain in the end and that the method must have been influential. The sigma of 12.20 shows the variability of the group. The critical ratio of 8.08 indicates that it is reliable. The negatives as shown in the table reveal how individual members lost some of their gain from the other method as a result of the experimental procedure. Pupils whose intelligence was relatively high and pupils whose intelligence was relatively low made high scores on the tests at the end of these instructional periods and other pupils of high and of low intelligence lost as a result of these teaching periods. It seems that this method was effective to the extent of producing some gains.

Comparison of Gains of the Two Methods.--Table 3 shows a comparison of the sum of gains by the control group and the experimental group and the excess gain for each group over the other with other statistics in the geography experiment. A study of this table makes clear the fact that there was a significant gain in favor of the control method. On computing the difference between the two means, 23.17 and 17.78, it is found to be 5.39. This was a gain which is thirty per cent of the experimental group; or we may say that the gain by the control group was one hundred thirty per cent of that of the experimental group. The critical ratio of 1.49 indicates that the chances are 93 in 100 or 13 to 1 in favor of the control method.

TABLE 3

A COMPARISON OF THE SUM OF GAINS BY THE CONTROL GROUP AND THE EXPERIMENTAL GROUP AND THE EXCESS GAIN FOR EACH GROUP OVER THE OTHER WITH OTHER STATISTICS IN THE GEOGRAPHY EXPERIMENT

PAIR Number	Sum of Gains		Excess Gains
	Control	Experimental	Differences
1	28	14	14
2	21	36	-15
3	29	10	19
4	25	20	5
5	30	30	0
6	19	21	- 2
7	25	24	1
8	21	21	0
9	24	2	22
10	38	- 1	39
11	19	11	8
12	22	33	-11
13	21	5	16
14	4	29	-25
15	37	19	18
16	1	41	-40
17	39	31	8
18	17	16	1
19	38	9	29
20	35	- 6	41
21	9	21	-12
22	13	24	-11
23	15	39	-24
24	37	- 1	38
25	15	6	9
26	23	16	7
27	30	14	16
28	14	14	0
Means	23.17	17.78	5.39
Sigmas	10.07	12.20	19.13
Standard Errors	1.70	2.07	3.61
Ratios Critical	3.23		1.49
Chances in 100	1.67		93
	95		

The critical ratio of 1.67 shown on the table is a check and verification of the first ratio of 1.49. The correlation coefficient as shown in Table 4, the work sheet for the computation of the correlation coefficient between the sums of the gains by the control group and the experimental group in the geography experiment, was -.469. The significance of this is that there was a negative relationship between the two methods. These data seem to make it evident that the control method was superior to the experimental method; moreover, as gain was achieved in the control group, it was lost in the experimental group.

Summary of Chapter.--The objective of the tests was to determine the gains made at the end of each period of teaching. The two methods were evaluated by comparing the means of the sum of the gains. The sum of gains was obtained from the gains made at the end of each period. The results as presented in the tables, indicated that there was a gain made by both groups as a result of the methods, but the excess was in favor of the control group. The coefficient of correlation indicated further that as gains were made by certain individual members of the control group, it was lost by individual members of the experimental group.

CHAPTER IV

SUMMARY AND CONCLUSION

Problem and Procedure.--The problem of this study was to determine the effectiveness of differentiated assignment in teaching fourth grade geography in the Valena C. Jones School of New Orleans, Louisiana.

For the groups, two fourth grade classes at the Valena C. Jones School were selected. The two groups were equated on the basis of the results of the Otis Group Intelligence Scale. The mean of the I. Q.'s for Group A was 94.64 and for Group B was 90.98. Each group consisted of twenty-eight members. When instruction began, Group A was known as Group A/1 Experimental and Group B was called Group B/1 Control. At the intermediate period when the groups were rotated, Group A/1 Experimental became Group A/2 Control and Group B/1 Control became Group B/2 Experimental.

The tests utilized in the study were the Otis Group Intelligence Scale, Primary Examination: Form A and the Gregory-Hagerty Geography Test for Grades 4, 5, and 6: Forms A and B. The results of the intelligence test were used as a basis for matching the groups. Form A of the Gregory-Hagerty Test was used as an initial test to discover the background in geography of the groups. It was also used as a final test to determine the gain made in the last period of instruction. Form B was the intermediate measurement which was to find out the progress from the initial to the intermediate tests.

The groups were given the intelligence test and then the initial test. They were equated and the first period of instruction followed. For eight weeks Group A/1 Experimental was taught by the method of differentiated assignments. The experimental factor employed with this group was to allow its members to choose their assignments for each week. The assignments made

by the teacher were presented to the class to be considered and from which to make selections. Each activity chosen was developed during the week and reported to the class in general at the end of the week. The class contributed to the individual assignments by discussing and making comments on each report. Group B/1 Control was taught by the method of class assignments during the first eight weeks of the study. The same assignments were presented to this group, but its members did not have the opportunity of choice. The investigator selected the assignments for each class period and directed the class through the steps in the development of them. At the end of the eight weeks the groups were rotated. The control group became the experimental and the experimental group became the control group, and the two methods were applied for another eight weeks. When the second period had expired, the final test was given and the study ended.

Major Findings.--The major findings of the study were as follows:

1. The results of the data seemed to indicate that the method of class assignments was superior to the method of differentiated assignments.

2. As the pupils gained under the class assignment procedure, they lost under the differential procedure.

3. In terms of intelligence, the largest gains made by the pupils of relatively high intelligence, as well as those made by pupils of relatively low intelligence, were in favor of the class assignment method.

4. In terms of retention, as indicated by the final test, the results favored instruction by the control method.

5. Students had the tendency to get satisfaction out of knowing that the teacher had a definite plan of action and seemed to enjoy being directed by such a one in the developing of their assignments.

6. There were no problems in discipline worthy of mention in the

group wherein everyone worked on the same assignment.

7. The finished products of the control group were more complete and thorough.

8. The procedure permitting pupils to have a choice seemed to encourage laziness and indifference in some students.

9. Individuals who could not be induced to select assignments had a tendency to create discipline in the experimental group.

10. In terms of immediately building up the pupils' background in geography as indicated by the results of the intermediate test, the results favored the experimental method.

11. Creativeness and initiative in students were brought out by the method of differentiated assignments.

12. The differential procedure gave practice in assuming responsibilities and completing tasks.

13. Assignments were more meaningful where pupils had the opportunity of choice.

14. Students displayed a joy and happiness in achievement when assignments selected were completed and reported.

15. Practice in poise and self-expression before groups was obtained in the plan where reports were made.

16. Both procedures seemed to be effective in imparting valuable information.

17. Both procedures gave the pupils practice in using supplementary books.

18. The children seemed to have more physical freedom by the experimental method.

19. Inasmuch as pupils chose those activities which appeared to

appeal to their interests and abilities, it seemed that individual differences were taken care of in the experimental procedure.

20. Pupils whose I. Q.'s were highest in the classes made high gains in both groups.

General Conclusions.--The results have shown that, apparently, the method used with the control groups was superior to the method used with the experimental groups. Since it is probable that factors beyond the control of the experimentor may have entered in the situation to influence these results, no definite conclusion will be made here concerning the methods. However, certain advantages and disadvantages seem to be a part of both procedures. In view of these and in considering them in terms of pupil growth, the following concluding observations are cited:

1. Pupils need careful guidance and direction in making selections in differentiated school programs.

2. Pupils should be taught essentials and how to evaluate them in order to be aware of what is valuable for their development.

3. Pupils should be taught first how to study, how to find information and how to make reports, before they are left to do these activities alone.

4. Children do not know what is always suited to their capacities, so that some things must be selected for them.

5. Children tend to accept and carry out effectively the activities for which they feel a need. If teachers can create a felt need in pupils for the particular thing which they want to teach, good results may be realized.

6. Freedom in school situations is only wholesome when it is freedom in thought and action for the good of the group.

7. Children tend to respect the teacher who makes thorough plans. Discipline is no problem in such a situation.

8. Students develop in character when they practice completing a task started.

9. Insofar as the teacher knows the individual differences of her class better than the pupils themselves, she should do the greater part of the selecting of their school activities for them.

Final Statement.--The findings from this study will be used accordingly for the improvement of techniques and methods of the investigator in class room instruction.

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APPENDIX

TABLE 4

WORK SHEET FOR THE COMPUTATION OF THE CORRELATION COEFFICIENT BETWEEN THE SUMS OF GAINS BY THE CONTROL GROUP AND THE EXPERIMENTAL GROUP IN THE GEOGRAPHY EXPERIMENT

PAIR Number	Sum of Gains		Sums	Sums Squared	Squares		Products
	Control A	Experimental B	A+B	$(A+B)^2$	A^2	B^2	AxB
1	28	14	42	1764	784	196	392
2	21	36	57	3249	441	1296	756
3	29	10	39	1521	841	100	290
4	25	20	45	2025	625	400	500
5	30	30	60	3600	900	900	900
6	19	21	40	1600	361	441	399
7	25	24	49	2401	625	576	600
8	21	21	42	1764	441	441	441
9	24	2	26	676	576	4	48
10	38	- 1	37	1369	1444	1	- 38
11	19	11	30	900	361	121	209
12	22	33	55	3025	484	1089	726
13	21	5	26	676	441	25	105
14	4	29	33	1089	16	841	116
15	37	19	56	3136	1369	361	703
16	1	41	42	1764	1	1681	41
17	39	31	70	4900	1521	961	1209
18	17	16	33	1089	289	256	272
19	38	9	47	2209	1444	81	342
20	35	- 6	29	841	1225	36	-210
21	9	21	30	900	81	441	189
22	13	24	37	1369	169	576	312
23	15	39	54	2916	225	1521	585
24	37	- 1	36	1269	1369	1	- 37
25	15	6	21	441	225	36	90
26	23	16	39	1521	529	256	368
27	30	14	44	1936	900	196	420
28	14	14	28	784	196	196	196
Sums	649	498	1147	50761	17883	13030	9924
Means	23.17	17.78	40.95	1812.17	638.4	465.27	354.29

Checks: 1147 equals 649 + 498
40.95 equals 23.17 + 17.78

Checks: 50761 equals 17883 + 13030 + 2 x 9924
1812.17 equals 638.42+465.17+2x354.29

$$r/AB = \frac{354.29 - 23.17 \times 17.78}{\sqrt{638.42 - (23.17)^2}\ \sqrt{465.17(17.78)^2}} = -.469$$

OTIS GROUP INTELLIGENCE SCALE

Devised by ARTHUR S. OTIS

PRIMARY EXAMINATION: FORM A

My name is.....

My birthday is.....

On my last birthday I was ..... years old.

I am in the ..... grade.

The name of my school is.....

The name of this city is.....

The date today is.....

(Do not write below this line.)

Remarks or Further Data

1.....

2.....

3.....

4.....

5.....

6.....

7.....

8.....

9.....

10.....

11.....

12.....

13.....

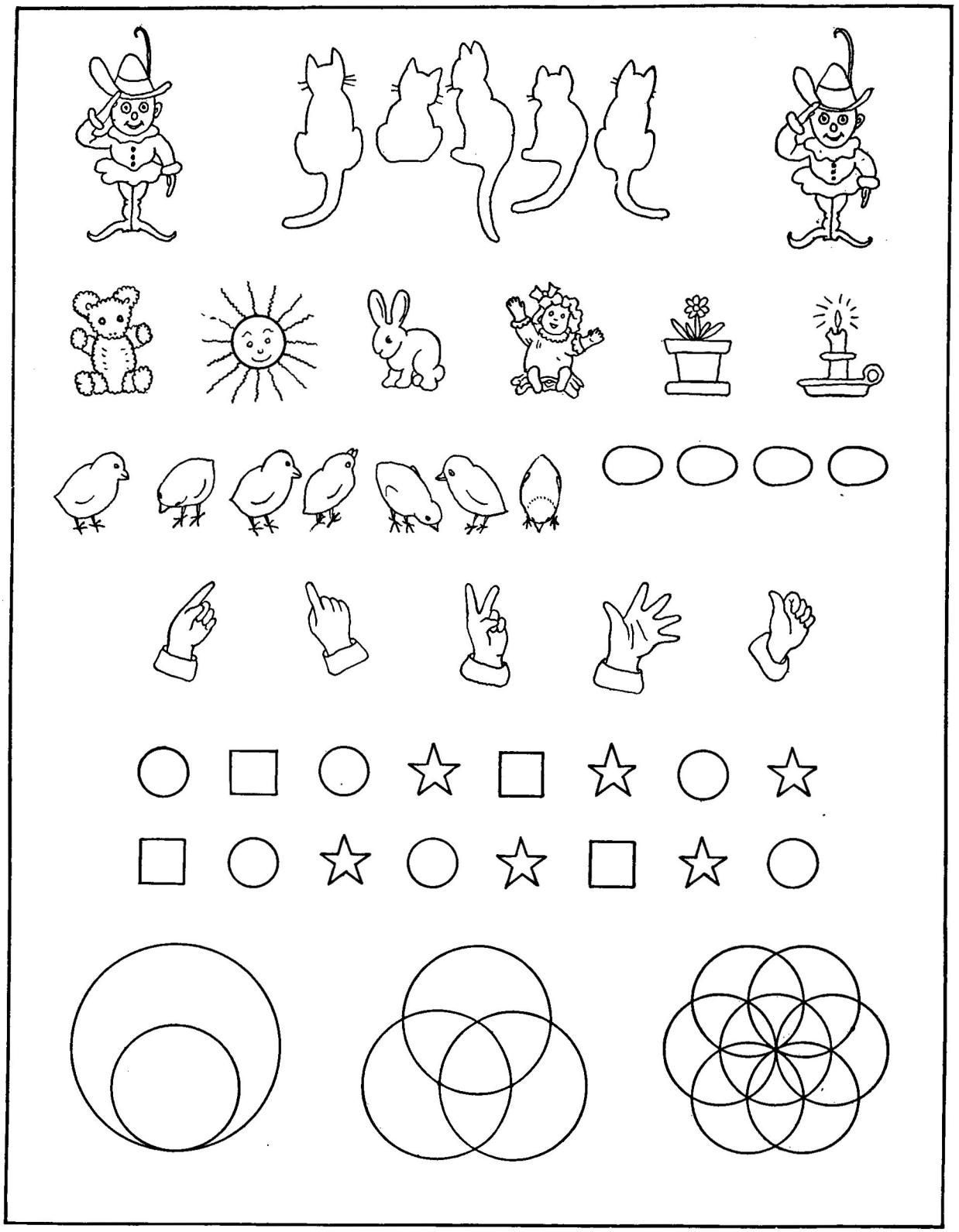
14.....

15.....

TEST	SCORE
1	
2	
3	
4	
5	
6	
7	
8	
Total Score	
Norm	
IQ	
PR	

Published by World Book Company, Yonkers-on-Hudson, New York, and 2126 Prairie Avenue, Chicago PRINTED IN U. S. A.

1



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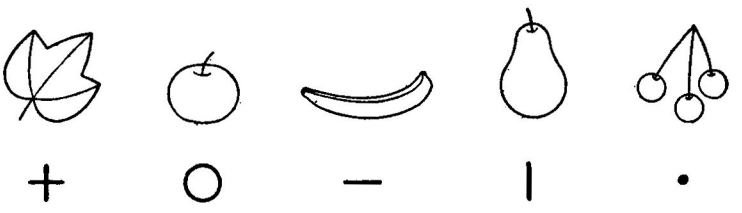

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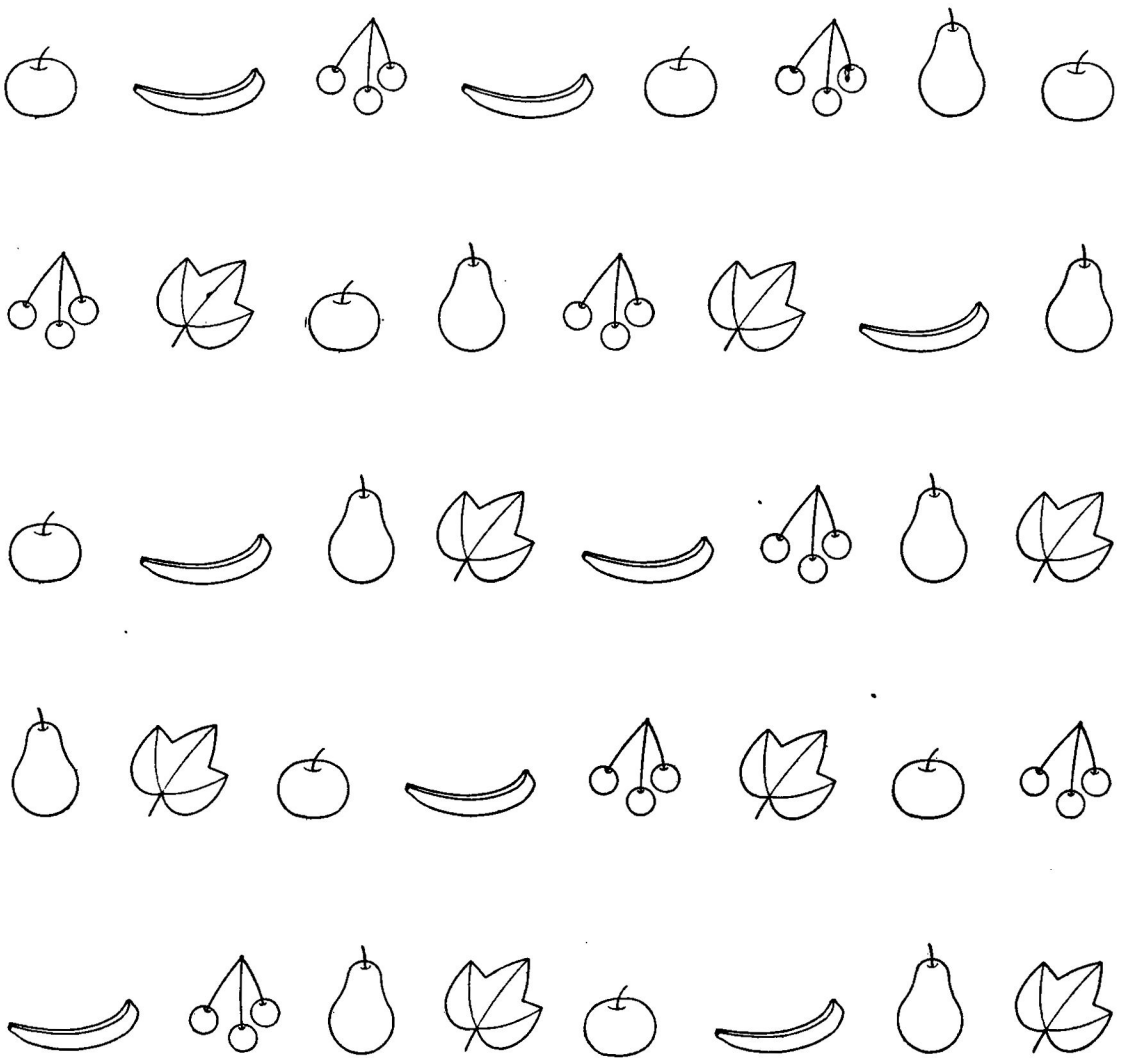

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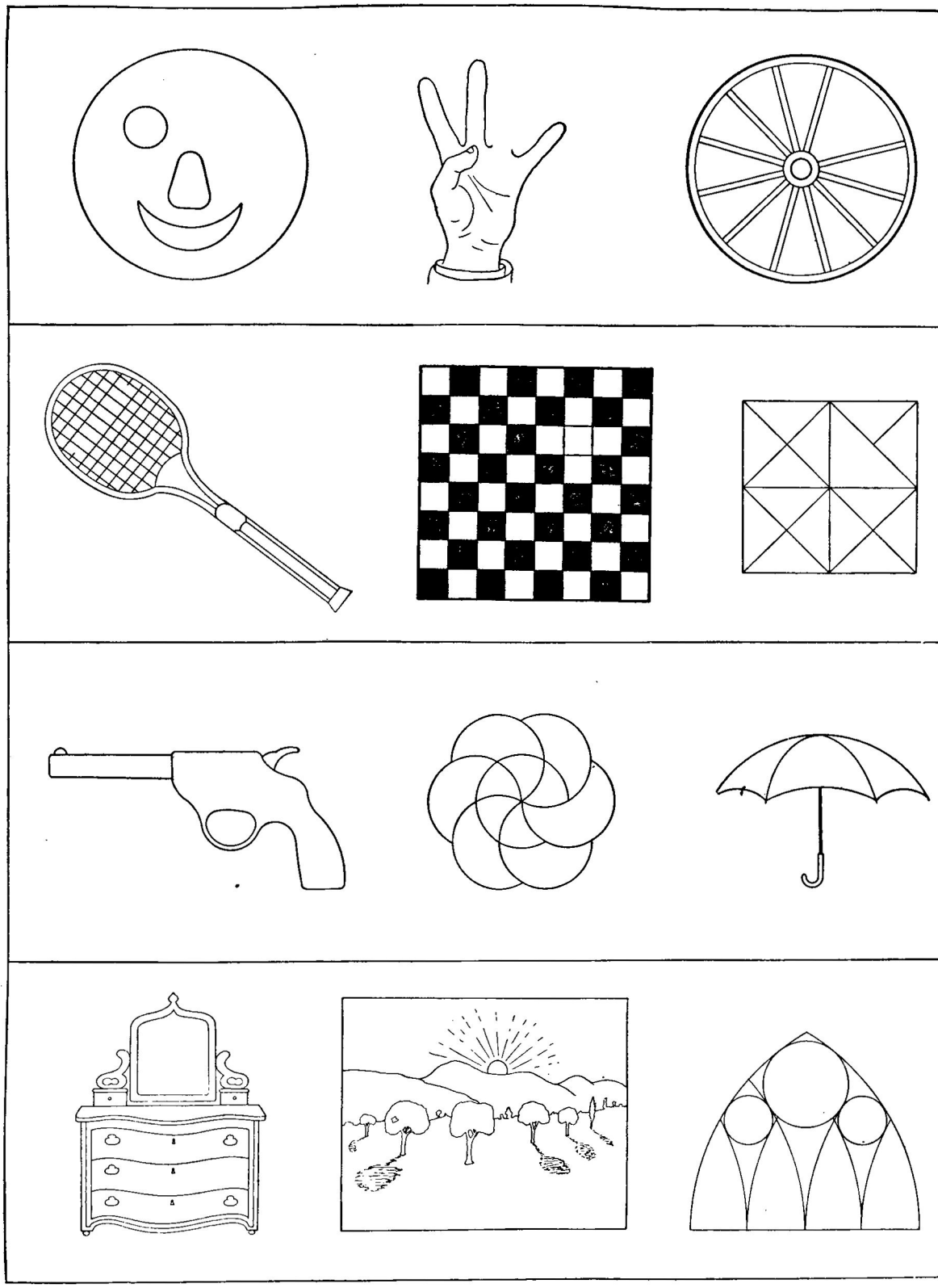

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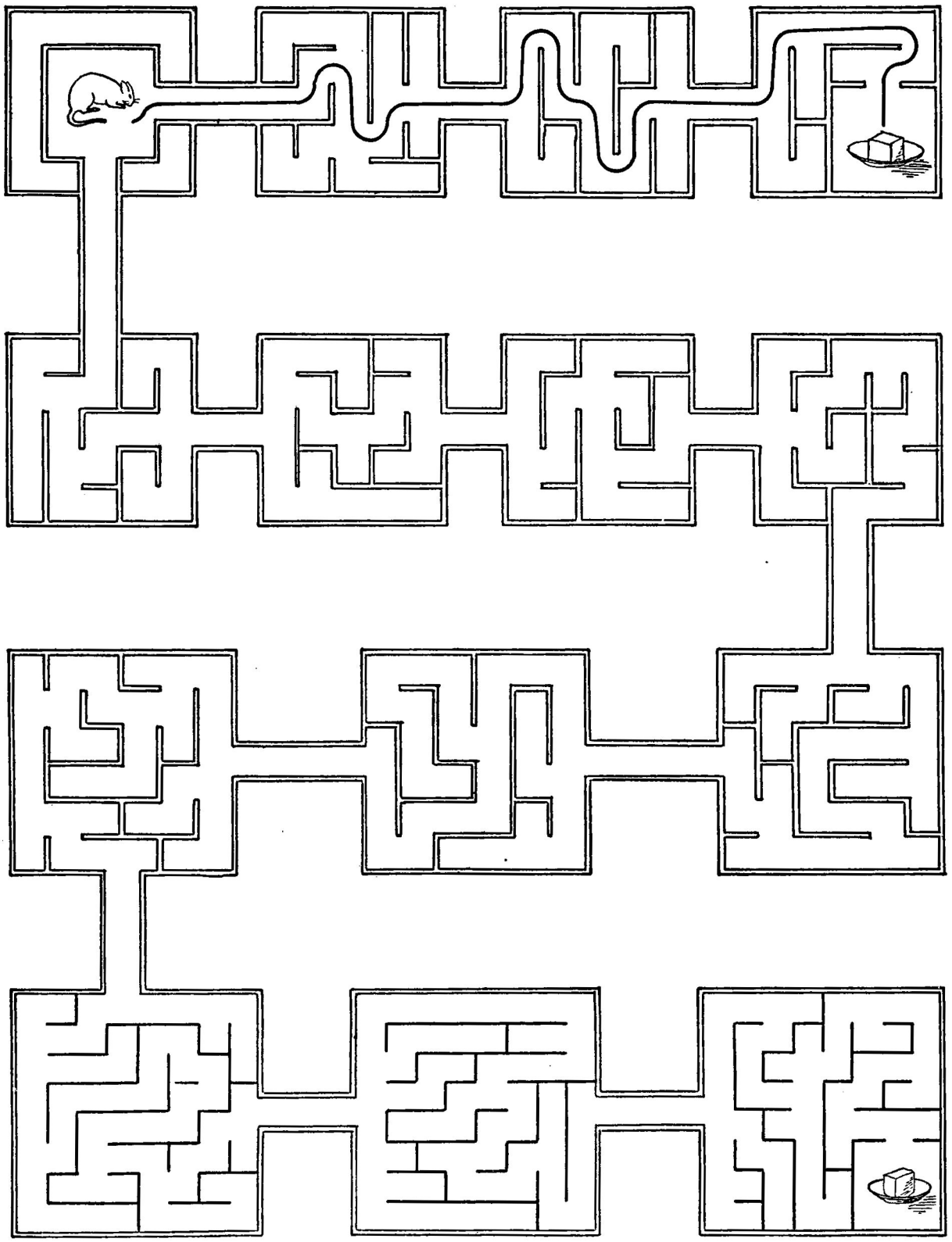

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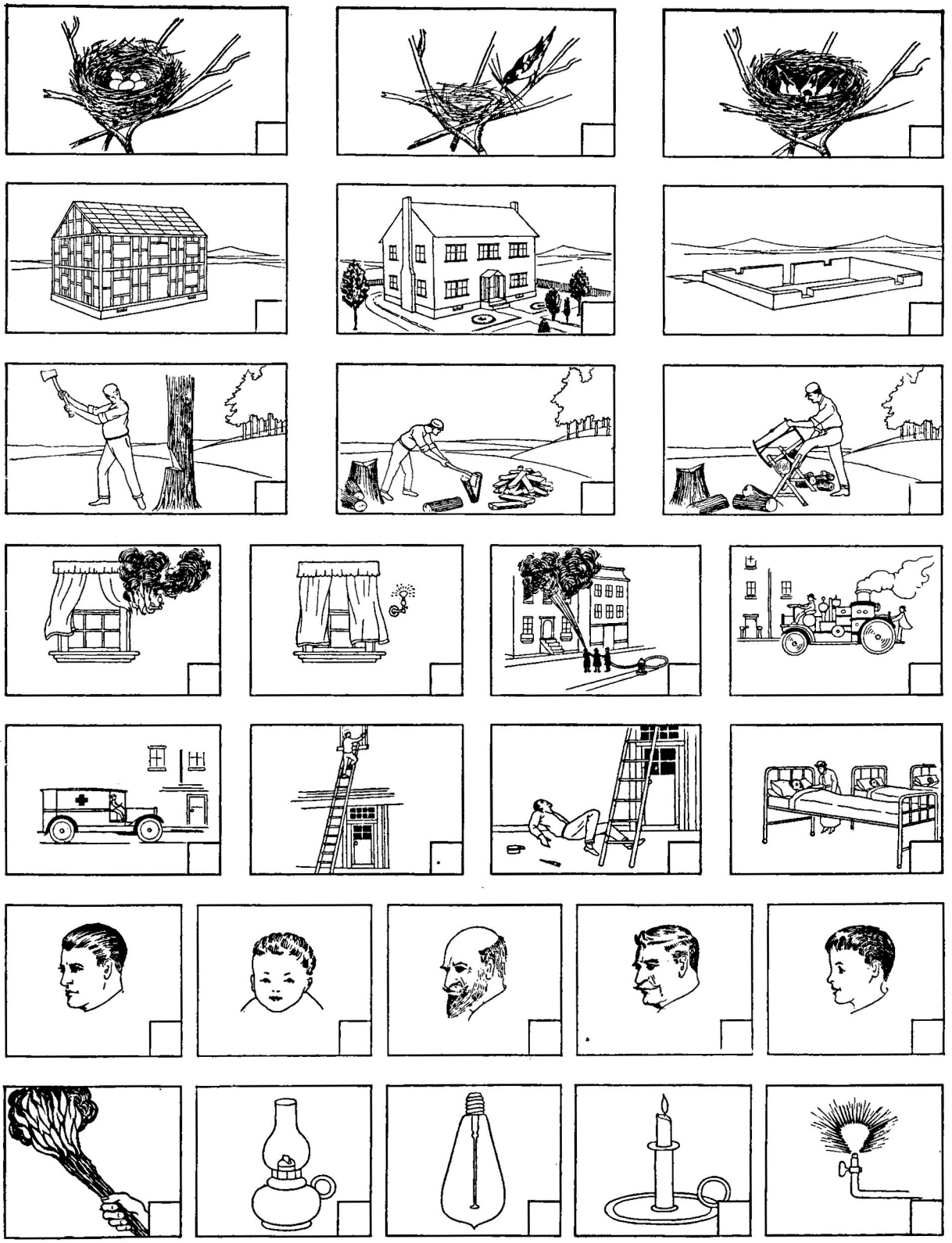
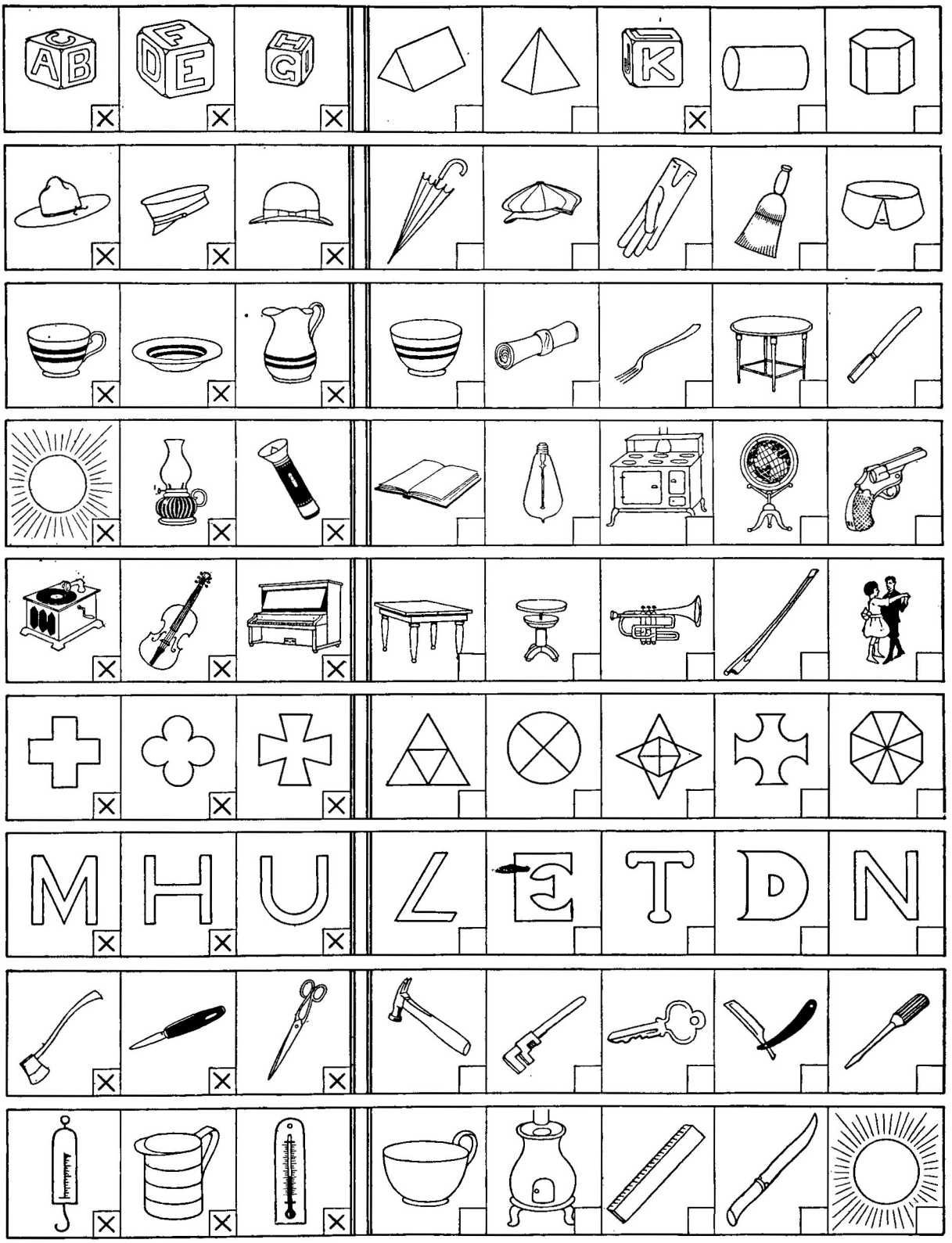


Score. . . . . .



Score . . . . . .

----------Pupil's Name.

The Gregory-Hagerty Geography Tests

FORM A

(For Grades 4, 5 and 6.)

Designed By

DR. C. A. GREGORY, University of Cincinnati, and MARY E. HAGERTY, Instructor in Geography in the Cincinnati Public Schools.

Pupil's Name----------Grade----------

City or Post Office----------Name of School----------

Name of Teacher----------Date, Year---------- Month----------

(Do not look on the inside of this test until told to by the Examiner. Keep this side of the test up until told to begin.)

DIRECTIONS FOR DOING THE TEST.

This test consists of five parts. We will give you an example of each part and show how each part is to be done. The directions are repeated on the inside of the test and you should read them again there. (The examiner should go over the examples below with the pupils until each part is clear, using the blackboard if necessary to demonstrate the map study on pages 4 and 5.)

PART I. IS MISCELLANEOUS GEOGRAPHICAL FACTS.

It is on pages 2 and 3 of the test. Page 2 consists of a number of incomplete sentences and questions. You are asked to complete them by filling the blanks with the proper word or words. Example: A dry, sandy plain is called a ----------. The word "desert" should be written in the blank since it makes the sentence true. Put your answers to the right of the page where it says—"Put your answers here"—so they may be scored easily. Be careful to get your answers written on the right line.

Page 3 of Part I consists of a number of questions and sentences each having three possible answers. You are to put a cross (X) before each part that makes the sentences and questions true. Example:

The word, "Andes" is the name of a
----------river.
----X----mountain system.
----------city.
The correct answer, of course, is the second one, so we have put a cross before the words, "mountain system."

PART II. IS LOCATIONAL GEOGRAPHY AND MAP STUDY

There you will be asked to locate cities, rivers, continents, oceans, lakes, seas, gulfs, countries, and mountain systems. All of these are represented by little circles, triangles and squares with letters and figures in them. (Examiner should illustrate for lower grades.)

CITIES are represented by little crosses, x, with arrows leading out to figures. For example: San Francisco is represented on the map by a cross, x, with an arrow leading out to the figure 8. (The examiner should illustrate this for children in the fourth and fifth grades.) THE CONTINENTS are represented by little squares with figures in them ranging from 1 to 6. (The examiner should illustrate.) THE OCEANS, LAKES, SEAS AND GULFS are represented by circles with letters in them. THE COUNTRIES are represented by circles with figures in them. THE MOUNTAIN RANGES are represented by triangles with figures in them. The problem for the pupil in each case is to write the proper figure or letter after each name called for.

PART III. IS ZONES, SEASONS, CLIMATE AND RAINFALL

Here there are questions and statements like those in PART I mentioned above.

PART IV. IS PLANTS, ANIMALS AND PEOPLES

It is done the same as PART 3.

PART V. IS COUNTRIES AND THEIR PRODUCTS

It is done the same as PARTS 3 and 4.

PART 1—MISCELLANEOUS GEOGRAPHICAL FACTS AND QUESTIONS

Fill the blanks with the proper words so as to make the sentences true or the right answers to the questions. Instead of putting your answers immediately after the sentences or questions put them in the space to the right where it says, "Put your answers here."

PUT YOUR ANSWERS HERE

1. In map study, which side of the map is north? ..... 1._____
2. Is the east side of a map the top, bottom, right or left? ..... 2._____
3. The imaginary circle, drawn around the earth midway between the poles, is called the ..... 3._____
4. The earth is in the form of a ..... 4._____
5. The weather in the Torrid Zone, every day of the year, is ..... 5._____
6. What ocean would you cross in traveling from the eastern part of the United States to Europe? ..... 6._____
7. What nation owns and controls the Panama Canal? ..... 7._____
8. In traveling westward from the United States to Asia what ocean would you cross? ..... 8._____
9. How many seasons are there in the Temperate Zones? ..... 9._____
10. The earth rotates on its ..... 10._____
11. A small body of land completely surrounded by water is ..... 11._____
12. In what zone do we always have winter? ..... 12._____
13. How many continents are there in the western hemisphere? ..... 13._____
14. The highest mountain range in the United States is the ..... 14._____
15. If you were in New York and wanted to travel by the shortest route to London in what general direction would you go? ..... 15._____
16. The Panama Canal connects the Atlantic Ocean with what other Ocean? ..... 16._____
17. What ocean would you cross in going from San Francisco to the Hawaiian Islands? ..... 17._____
18. What very important city is located on the Potomac River? ..... 18._____
19. Name a southern state bordering on the Gulf of Mexico and the Atlantic Ocean that is famous as a winter resort ..... 19._____
20. If you traveled from Chicago to New York would your watch be too fast or too slow when you arrived in New York? ..... 20._____
21. Which state produces the more iron, Minnesota or Illinois? ..... 21._____

Part 1—Score equals the number right .....

PART 1—MISCELLANEOUS GEOGRAPHICAL FACTS AND QUESTIONS—Cont'd

Read all three parts of each of the statements made below and put a cross (X) on each of the dotted lines before the parts that make the statement true. Be sure to check ONLY ONE part of each of the statements.

1. The largest desert region in the world is
   _____the Arabian Desert in Asia.
   _____the Great Basin in the United States.
   _____the Sahara Desert in Africa.

2. Few people live in the Great Basin because
   _____the climate is so dry and hot.
   _____the soil is so poor.
   _____there are so many mountains they cannot farm the land.

3. New England is noted chiefly as a
   _____great manufacturing region in the United States.
   _____coal and iron region.
   _____region which produces wheat and corn.

4. Fiords, or great mountain canyons into which the sea water has come far inland, are numerous in
   _____Norway.
   _____France.
   _____Holland.

5. The Hawaiian and Philippine Islands are
   _____independent and govern themselves.
   _____governed by the United States.
   _____governed by Spain.

6. Gibraltar is an important strait and a fortress that is owned by
   _____England.
   _____United States.
   _____France.

7. The nation that has more colonies than any country in the world is
   _____Germany.
   _____France.
   _____England.

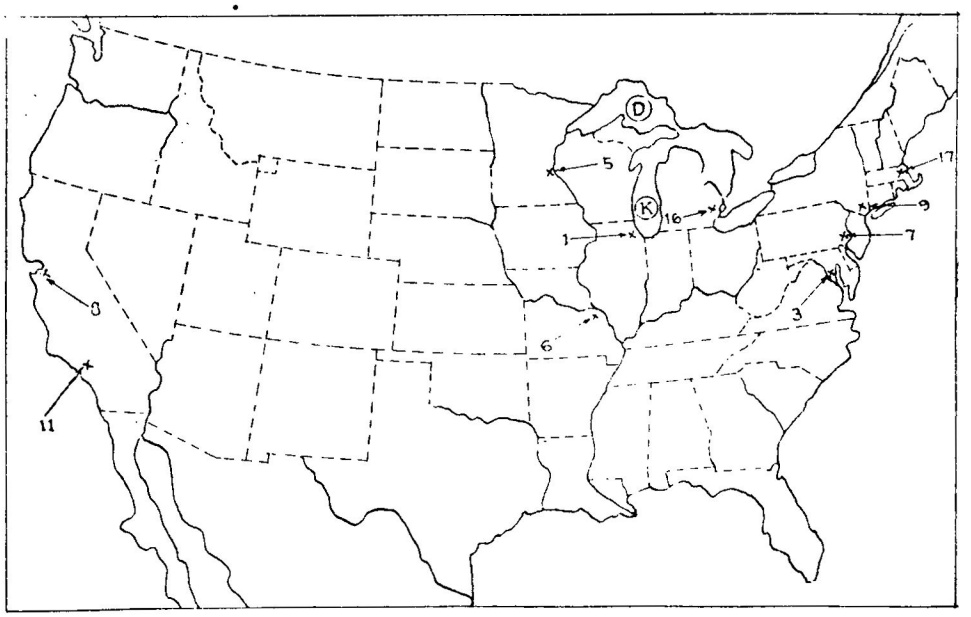
8. The soil carried down by the rivers is
   _____very rich and good for farming.
   _____very poor because it comes from the hilly lands.
   _____chiefly clay and used for making brick.

9. One proof that the earth is round is,
   .....it revolves around the sun.
   _____the sun rises in the East and sets in the West.
   _____ships have sailed around it.

10. The highest mountains in the world are the
    _____Rocky.
    _____Himalayas.
    _____Andes.

Part 1—Cont'd—No. right....; No. wrong....; Score=number right minus ½ number wrong....

PART 2—LOCATIONAL GEOGRAPHY AND MAP STUDY



BEGIN HERE. Read what it says about the location of cities, rivers and continents and put your answers where it tells you to put them below. Some cities, countries and lakes are given on the two enlarged maps at the bottom of this page and at the bottom of page 5.

THE LOCATION OF CITIES. The cities are represented on the map by little crosses with arrows leading out to a figure on the map. For example, San Francisco is number 8. Put the right numbers after each of these cities. If the cities are not found on the hemisphere maps at the top of the pages look on the enlarged maps below.

CITIES.

	PUT YOUR ANSWERS HERE
San Francisco	8
London	
Washington	
Los Angeles	
Minneapolis-St. Paul	
St. Louis	
Berlin	
Tokio	
Melbourne	
Boston	

RIVERS.

The rivers are represented by little squares like this ☐ with letters in them. For example, the Mississippi River is represented by a little square with the letter B in it. What letters represent each of the following rivers:

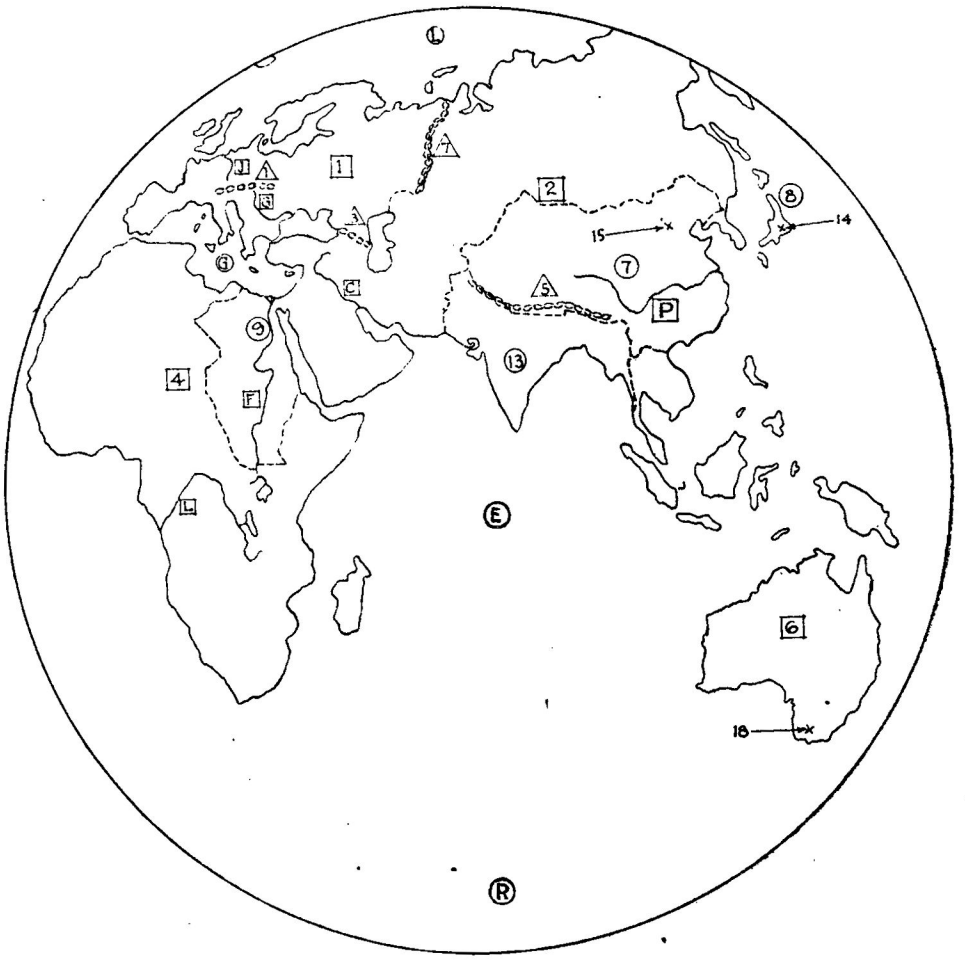
	PUT YOUR ANSWERS HERE
Mississippi	B
Amazon	
Tiger-Euphrates	
St. Lawrence	
Nile	
Danube	

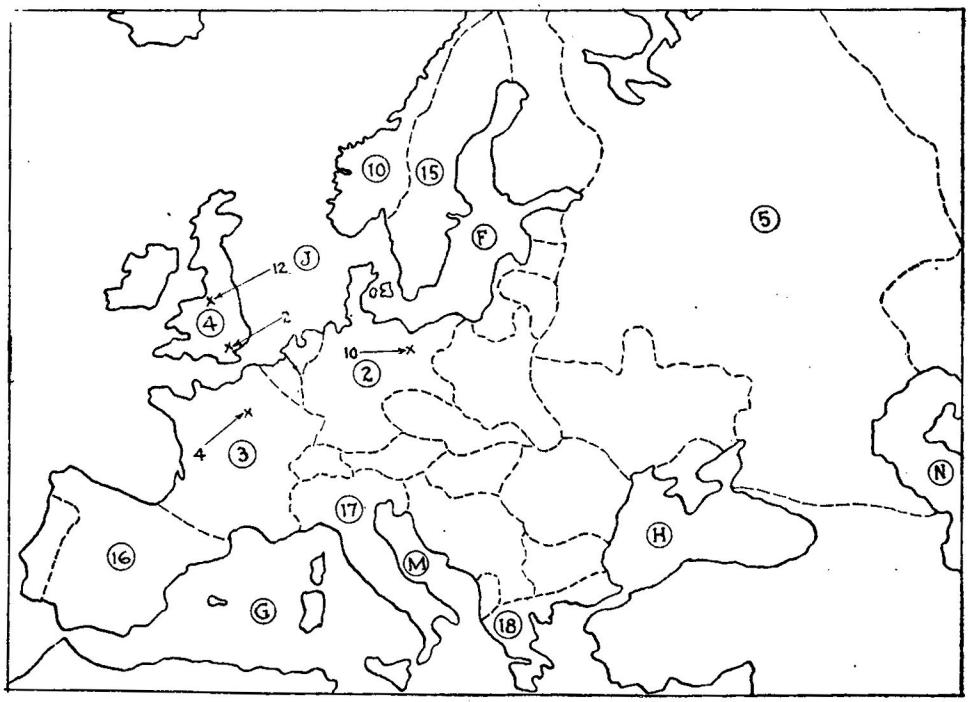
CONTINENTS.

The continents are represented by little squares with figures in them. For example, North America is represented by a little square, like this ☐, with the figure 3, in it. Write the proper figures after the continents given below.

	PUT YOUR ANSWERS HERE
North America	3
Asia	
Australia	
Africa	

Part 2—Score equals the number right .....





OCEANS, LAKES, SEAS, AND GULFS.

The oceans, lakes, seas and gulfs are represented by little circles with letters in them. For example, the Gulf of Mexico is represented by a little circle with the letter A in it, like this Ⓐ. Write the proper letters after each of the oceans, lakes, seas and gulfs below.

	PUT YOUR ANSWERS HERE
Gulf of Mexico	A
Atlantic Ocean	
Lake Superior	
Pacific Ocean	
North Sea	
Caspian Sea	
Arctic Ocean	
Adriatic Sea	

COUNTRIES.

The countries are represented by circles with figures in them. For example Spain is represented this way ⑯. Write the proper figures after each of the countries named below.

	PUT YOUR ANSWERS HERE
Spain	16
Germany	
Canada	
Russia	
Japan	
Norway	
Egypt	
China	
Mexico	
England	
France	

MOUNTAIN RANGES.

The mountain ranges are represented by triangles, like this △, with figures in them. For example, the Andes Mountains are represented by a little triangle with the figure 4 in it. Write the proper figures after each of the mountains named be ow.

	PUT YOUR ANSWERS HERE
Andes	4
Appalachian	
Rockies	
Ural	

Part 2 (Cont'd)—Score Equals=the number right .....

PART 3—ZONES, SEASONS, CLIMATE, AND RAINFALL

Read all three parts of each of the statements made below and put a cross (X) on each of the dotted lines before the parts that make the statements true. Be sure to check ONLY ONE part of each of the statements.

1. As we travel north or south of the Equator the temperature
   _____grows colder.
   _____grows warmer.
   _____is unchanged.

2. _____The Equator
   _____The Tropic of Cancer } separates the Torrid Zone from the North Temperate Zone.
   _____The Tropic of Capricorn

3. Sometime during the year the sun is directly overhead in the
   _____frigid zones.
   _____torrid zone.
   _____temperate zones.

4. At the North Pole the temperature is
   _____colder than at the South Pole.
   _____about the same as the South Pole.
   _____warmer than at the South Pole.

5. The four seasons of the year are caused by the
   _____rotation of the earth on its axis.
   _____revolution of the earth around the sun and its axis being inclined 23½ degrees from the vertical.
   _____earth being nearer to the sun in the summer than in the winter time.

6. The higher one climbs up a mountain the
   _____hotter the air grows because he is nearer the sun.
   _____temperature remains the same as on the lower slopes.
   _____cooler the air becomes.

7. Snow may be found in the hot belt near the equator
   _____in the lowlands.
   _____in the winter time.
   _____on the tops of the very high mountains.

8. The coastal cities of the United States have a less changeable climate than the cities in the same latitude in the Great Central Plains because
   _____their nearness to the ocean evens the climate due to the winds that blow over the water which cools more slowly than the land.
   _____water cools more quickly than land.
   _____mountains protect the coastal cities from cold winds.

9. If you were sick and the doctor ordered you to go to a region where the climate is warm and dry, which of these states would you go to?
   _____Oregon.
   _____Michigan.
   _____Arizona.

10. We can find in what zone any country lies by finding its
    _____latitude.
    _____longitude.
    _____altitude.

11. The United States lies in
    _____the Frigid Zone.
    _____the Torrid Zone.
    _____the Temperate Zone.

12. The prevailing temperature of the United States is that of lands in the
    _____hot belt.
    _____cold belt.
    _____intermediate or temperate belt.

Part 3—No. right.....; No. wrong.....; Score=number right minus ½ number wrong.....

PART 4—PLANTS, ANIMALS, AND PEOPLES

Read all three parts of each of the statements made below and put a cross (X) on each of the dotted lines before the parts that make the statements true. Be sure to check ONLY ONE part of each of the statements.

1. Date palms grow on the
   ---------- oases in the Sahara Desert.
   ---------- mountains in the temperate zones.
   ---------- plains of South Temperate Zone.

2. The growth of silk worms and the manufacture of silk are important industries in
   ---------- Greece and Russia.
   ---------- France and Italy.
   ---------- Germany and Poland.

3. Elephants are used to do many kinds of heavy work in
   ---------- India.
   ---------- Japan.
   ---------- China.

4. Reindeer and dogs are used for traveling in the Arctic regions because
   ---------- horses are too expensive.
   ---------- they like cold weather.
   ---------- it is hard to get food for horses, dogs and reindeer are better suited for traveling over the snow.

5. The people who live in Constantinople are mostly
   ---------- Turks.
   ---------- English.
   ---------- French.

6. Tobacco is one of the important crops in
   ---------- Minnesota and North Dakota.
   ---------- Massachusetts and Vermont.
   ---------- Kentucky and Virginia.

7. The home of the black race is in
   ---------- Southern Europe.
   ---------- Asia.
   ---------- Africa.

8. The most of the tea used in this country is grown in
   ---------- Brazil and Paraguay.
   ---------- India and Arabia.
   ---------- China and Japan.

9. In which of these states is the most sugar cane grown?
   ---------- Mississippi.
   ---------- Louisiana.
   ---------- Texas.

10. Canada, Minnesota, and North and South Dakota are noted for their
    ---------- wheat crops.
    ---------- corn crops.
    ---------- sugar cane crops.

Part 4—No. right.....; No. wrong.....; Score=number right minus ½ number wrong .....

.....Pupil's Name.

The Gregory-Hagerty Geography Tests

FORM B

(For Grades 4, 5 and 6.)

Designed By

DR. C. A. GREGORY, University of Cincinnati, and MARY E. HAGERTY, Instructor in Geography in the Cincinnati Public Schools.

Pupil's Name.....Grade.....

City or Post Office.....Name of School.....

Name of Teacher.....Date, Year..... Month.....

(Do not look on the inside of this test until told to by the Examiner. Keep this side of the test up until told to begin.)

DIRECTIONS FOR DOING THE TEST.

This test consists of five parts. We will give you an example of each part and show how each part is to be done. The directions are repeated on the inside of the test and you should read them again there. (The examiner should go over the examples below with the pupils until each part is clear, using the blackboard if necessary to demonstrate the map study on pages 4 and 5.)

PART I. IS MISCELLANEOUS GEOGRAPHICAL FACTS

It is on pages 2 and 3 of the test. Page 2 consists of a number of incomplete sentences and questions. You are asked to complete them by filling the blanks with the proper word or words. Example: A dry, sandy plain is called a ..... The word "desert" should be written in the blank since it makes the sentence true. Put your answers to the right of the page where it says—"Put your answers here"—so they may be scored easily. Be careful to get your answers written on the right line.

Page 3 of Part I consists of a number of questions and sentences each having three possible answers. You are to put a cross (X) before each part that makes the sentences and questions true. Example:

The word, "Andes" is the name of a
.....river.
....X....mountain system.
.....city.

The correct answer, of course, is the second one, so we have put a cross before the words, "mountain system."

PART II. IS LOCATIONAL GEOGRAPHY AND MAP STUDY

There you will be asked to locate cities, rivers, continents, oceans, lakes, seas, gulfs, countries, and mountain systems. All of these are represented by little circles, triangles and squares with letters and figures in them. (Examiner should illustrate for lower grades.)

CITIES are represented by little crosses, x, with arrows leading out to figures. For example: San Francisco is represented on the map by a cross, x, with an arrow leading out to the figure 8. (The examiner should illustrate this for children in the fourth and fifth grades.) THE CONTINENTS are represented by little squares with figures in them ranging from 1 to 6. (The examiner should illustrate.) THE OCEANS, LAKES, SEAS AND GULFS are represented by circles with letters in them. THE COUNTRIES are represented by circles with figures in them. THE MOUNTAIN RANGES are represented by triangles with figures in them. The problem for the pupil in each case is to write the proper figure or letter after each name called for.

PART III. IS ZONES, SEASONS, CLIMATE AND RAINFALL

Here there are questions and statements like those in PART I mentioned above.

PART IV. IS PLANTS, ANIMALS AND PEOPLES

It is done the same as PART 3.

PART V. IS COUNTRIES AND THEIR PRODUCTS

It is done the same as PARTS 3 and 4.

PART 1—MISCELLANEOUS GEOGRAPHICAL FACTS AND QUESTIONS

Fill the blanks with the proper words so as to make the sentences true or the right answers to the questions. Instead of putting your answers immediately after the sentences or questions put them in the space to the right where it says, "Put your answers here."

PUT YOUR ANSWERS HERE

1. The five great land masses of the world are called..... 1._____
2. The native home of the Black Race is in..... 2._____
3. The native home of the Yellow Race is in..... 3._____
4. We live on the continent of ..... 4._____
5. In what zone is the southern part of North America?..... 5._____
6. The northern boundary of the Torrid Zone is the..... 6._____
7. What is the capital of the United States?..... 7._____
8. What is the title of the most important officer in the United States Government?..... 8._____
9. If you travel twenty degrees eastward along the Equator would it be twenty degrees of latitude or of longitude?..... 9._____
10. What name is given to the imaginary line on which the earth turns?..... 10._____
11. What name is given to the northernmost end of the earth's axis? ..... 11._____
12. Soil or silt carried down by a river and left at its mouth is called a..... 12._____
13. What name do we give to a narrow neck of land that joins two larger bodies of land?..... 13._____
14. A narrow passage of water (not a canal) that connects two larger bodies of water is called a ..... 14._____
15. The Suez Canal connects the Mediterranean with what other sea?..... 15._____
16. In traveling from London to Halifax, you would cross what ocean?..... 16._____
17. What ocean would you cross in going from Liverpool to New York?..... 17._____
18. What strait would you pass through in traveling from the Mediterranean to the Atlantic Ocean?..... 18._____
19. New York City is at the mouth of what important river? ..... 19._____
20. What city manufactures more automobiles than any other city in the world?..... 20._____
21. In what state are most of the moving pictures made?..... 21._____

Part 1—Score equals the number right .....

Read all three parts of each of the statements made below and put a cross (X) on each of the dotted lines before the parts that make the statement true. Be sure to check ONLY ONE part of each of the statements.

1. Tourists like to spend their summer vacations in New England because
   ----------they can see the great glaciers there.
   ----------of the beautiful mountain scenery, the many lakes and the sea shore furnish restful spots and playgrounds.
   ----------they wish to see the great farm lands.

2. The Mississippi Valley is noted as
   ----------being the greatest manufacturing region in the United States.
   ----------the greatest agricultural region in the United States.
   ----------the chief mining region of the United States.

3. France and Germany both wished to own Alsace-Lorraine chiefly because of the
   ----------coal and iron mines in the Saar Basin.
   ----------size of the territory.
   ----------richness of the soil.

4. The chief reason why Holland is a dairying nation is
   ----------there is so much rich pasture in the lowland.
   ----------England needs cheese and butter.
   ----------the Dutch are unable to raise many crops.

5. Russia is noted primarily as a
   ----------wheat producing country.
   ----------great manufacturing nation.
   ----------dairying country.

6. The Swiss manufacture chiefly
   ----------steel and iron goods.
   ----------fine watches.
   ----------woolen cloth.

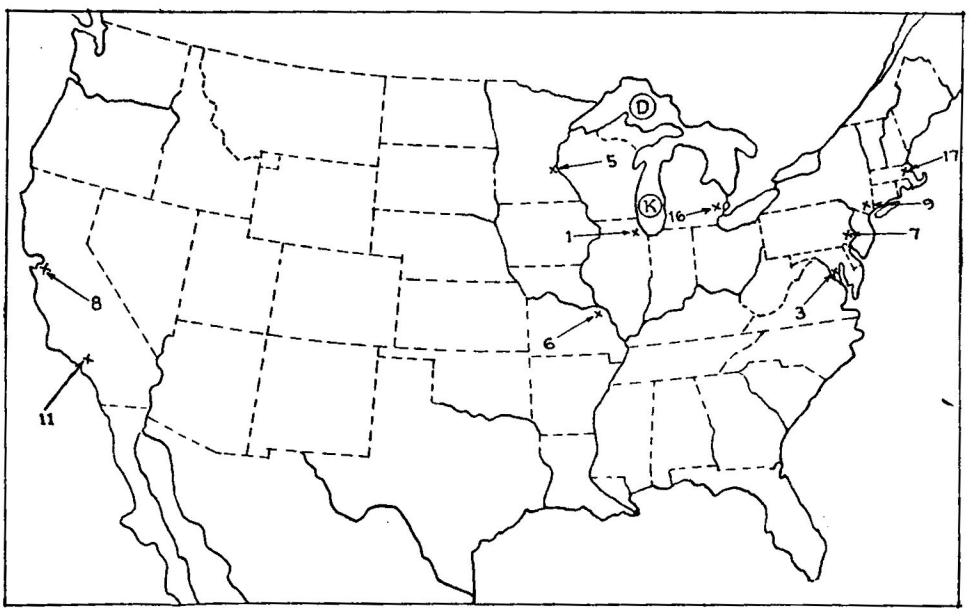
7. The Rhine, Rhone and Danube rivers rise in the
   ----------Appenine Mountains.
   ----------Alps Mountains.
   ----------Ural Mountains.

8. France is noted primarily as
   ----------a mining country.
   ----------an agricultural country.
   ----------as a great manufacturing country.

9. Which of these river systems is in South America?
   ----------Nile.
   ----------Mississippi.
   ----------Amazon.

10. The water from Lake Ontario flows into the
    ----------Mississippi River.
    ----------Hudson River
    ----------St. Lawrence River.

Part 1.—No. right.....; No. wrong.....; Score= number right minus ½ number wrong .....



BEGIN HERE. Read what it says about the location of cities, rivers and continents and put your answers where it tells you to put them below. Some cities, countries and lakes are given on the two enlarged maps at the bottom of this page and at the bottom of page 5.

THE LOCATION OF CITIES. The cities are represented on the map by little crosses with arrows leading out to a figure on the map. For example, Los Angeles is number 11. Put the right numbers after each of these cities. If the cities are not found on the hemisphere maps at the top of the pages look on the enlarged maps below.

CITIES.

	PUT YOUR ANSWERS HERE
Los Angeles	11
Chicago	
New York	
Liverpool	
Buenos Aires	
Detroit	
Pekin	
Philadelphia	
San Francisco	
Paris	

RIVERS.

The rivers are represented by little squares like these ☐ with letters in them. For example, the Amazon River is represented by a little square with the letter E in it. What letters represent each of the following rivers:

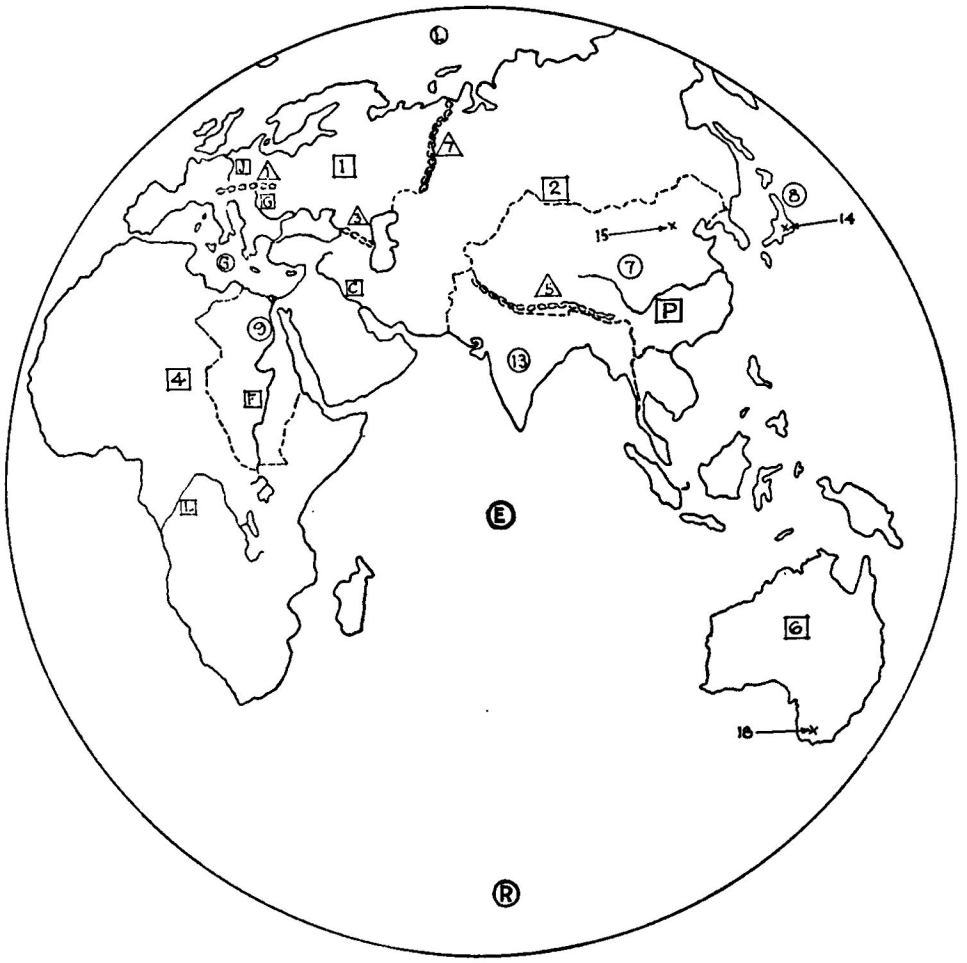
	PUT YOUR ANSWERS HERE
Amazon	E
Columbia	
Rio Grande	
Yangtze	
Mississippi	
Rhine	

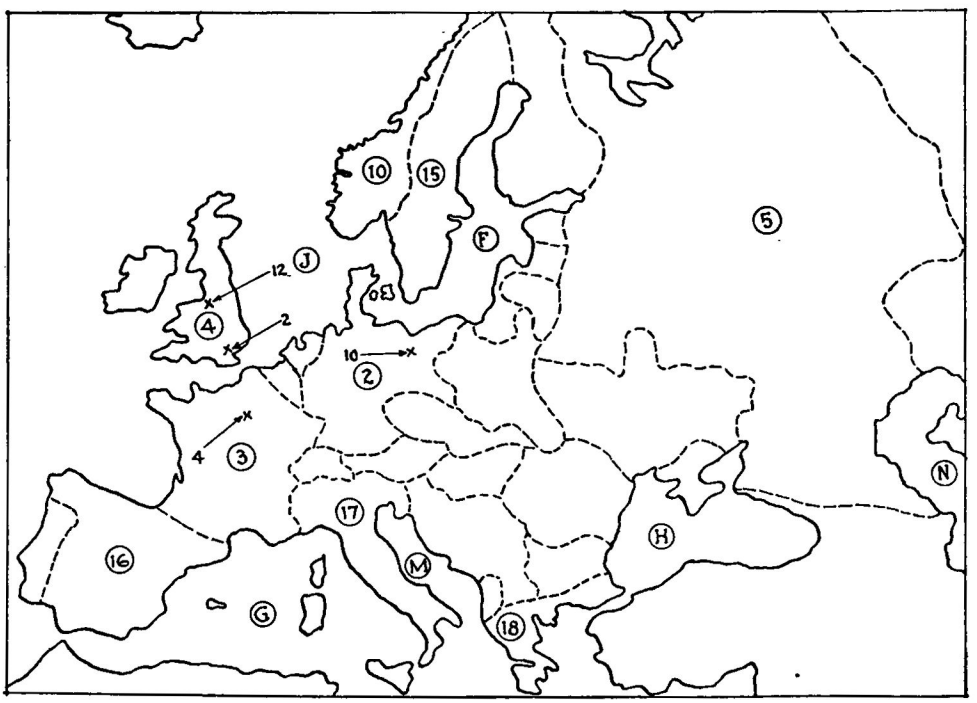
CONTINENTS.

The continents are represented by little squares with figures in them. For example: Africa is represented by a little square, like this ☐ with the figure 4 in it. Write the proper figures after the continents given below.

	PUT YOUR ANSWERS HERE
Africa	4
Europe	
South America	
North America	

art 2—Score equals the number right .....





OCEANS, LAKES, SEAS AND GULFS.

The oceans, lakes, seas and gulfs are represented by little circles with letters in them. For example, the North Sea is represented by a little circle with the letter J in it, like this Ⓙ. Write the proper letters after each of the oceans, lakes, seas, and gulfs below.

	PUT YOUR ANSWERS HERE
North Sea	J
Indian Ocean	
Baltic Sea	
Gulf of Mexico	
Mediterranean Sea	
Black Sea	
Antarctic Ocean	
Lake Michigan	

COUNTRIES.

The countries are represented by circles with figures in them. For example, Canada is number ①. Write the proper figures after each of the countries named below.

	PUT YOUR ANSWERS HERE
Canada	1
Spain	
United States	
India	
Argentina	
Italy	
Sweden	
Brazil	
Colombia	
Alaska	
Greece	

MOUNTAIN RANGES.

The mountain ranges are represented by triangles, like this △, with figures in them. For example, the Rocky Mountains are represented by a little triangle with the figure 6 in it. Write the proper figures after each of the mountains named below.

	PUT YOUR ANSWERS HERE
Rockies	6
Alps	
Andes	
Himalayas	

Part 2 (Cont'd)—Score equals the number right .....

PART 3—ZONES, SEASONS, CLIMATE AND RAINFALL

Read all three parts of each of the statements made below and put a cross (X) on each of the dotted lines before the parts that make the statements true. Be sure to check ONLY ONE part of each of the statements.

1. ----------The Torrid Zone
   ----------The South Temperate Zone. } is the hottest zone.
   ----------The North Temperate Zone

2. Very few people live in the desert because it is
   ----------so difficult to get food and drink.
   ----------so unhealthful.
   ----------so cold at night the crops will not grow.

3. When it is summer in the North Temperate Zone, in the South Temperate Zone it is
   ----------autumn.
   ----------spring.
   ----------winter.

4. During the season in which we get the most slanting rays from the sun, in the North Temperate Zone we are having
   ----------summer.
   ----------winter.
   ----------autumn.

5. In the North Temperate Zone, shadows are longer in winter than in the summer because the sun is
   ----------so far to the North.
   ----------so far to the South.
   ----------nearly directly over head in winter time.

6. Switzerland, Holland, and England are countries that have a
   ----------temperate climate.
   ----------torrid climate.
   ----------frigid climate.

7. The rotation, or turning, of the earth on its axis causes
   ----------the four seasons.
   ----------day and night.
   ----------the divisions of the earth into zones.

8. It takes the earth three hundred, sixty-five and a fourth days to
   ----------turn once on its axis.
   ----------to revolve around the sun.
   ----------to revolve about the moon.

9. Climate is affected by nearness to the ocean because
   ----------water heats slower than land and cools slower than land and the breezes that blow from the ocean make the climate more moderate.
   ----------the great ocean waves and tides come so far up the shore.
   ----------the constant evaporation that takes place keeps the climate damp.

10. Rain is caused by
    ----------winds.
    ----------the cooling of air in the higher regions of the atmosphere.
    ----------cyclones.

11. Norway and Sweden are not covered with ice, like Greenland, because
    ----------warm west winds blow from the Gulf Stream and make the climate warmer.
    ----------they are nearer the Equator.
    ----------they have such high mountains to protect them from cold winds.

12. When it is spring in the United States, in South Africa it is
    ----------summer.
    ----------winter.
    ----------spring.

Part 3—No. right.....; No. wrong.....; Score=number right minus ½ number wrong.....

PART 4—PLANTS, ANIMALS, AND PEOPLES

Read all three parts of each of the statements made below and put a cross (X) on each of the dotted lines before the parts that make the statements true. Be sure to check ONLY ONE part of each of the statements.

1. ----------Giraffes
   ----------Polar bears } live in the Torrid Zones.
   ----------Reindeer

2. Australia, the smallest of the continents, is noted for its
   ----------rice.
   ----------sheep.
   ----------manufactured goods.

3. Camels are used as beasts of burden in crossing the desert because
   ----------they are such swift travelers.
   ----------they can carry such heavy loads.
   ----------they can go for many days without water.

4. ----------Africa
   ----------Asia } is the native home of the ostrich.
   ----------North America

5. Of the five races of men, the most highly civilized is the
   ----------white race.
   ----------yellow race.
   ----------brown race.

6. Rubber is obtained
   ----------from the sap of certain trees that grow in the tropical countries.
   ----------by stripping the bark from trees in South America.
   ----------by manufacturing it from petroleum.

7. Rice is the chief article of food for the
   ----------white race.
   ----------yellow race.
   ----------black race.

8. Jute, a fibrous plant grown in India, is used chiefly in making
   ----------sacks.
   ----------blankets.
   ----------clothing.

9. Cotton grows in our Southern States on a
   ----------plant.
   ----------tree.
   ----------vine.

10. ----------England
    ----------Ireland } is known for its flax from which fine linen is made.
    ----------Scotland

Part 4—No. right.....; No. wrong.....; Score=number right minus ½ number wrong.....

PART 5—COUNTRIES AND PRODUCTS

Read all three parts of each of the statements made below and put a cross (X) on each of the dotted lines before the parts that make the statements true. Be sure to check ONLY ONE part of each of the statements.

1. Ivory is obtained from the
   ----------tusks of elephants.
   ----------mines of Africa.
   ----------North Sea.

2. Cork is obtained by
   ----------taking the pith from a tall reed.
   ----------manufacturing it from wood pulp.
   ----------stripping the bark from certain trees that grow in Portugal.

3. Great quantities of wool is obtained from the
   ----------camels of Africa.
   ----------sheep of Australia.
   ----------goats of Switzerland.

4. Many cocoanuts are sent to this country from the
   ----------islands of the Mediterranean.
   ----------Philippine Islands.
   ----------Orkney Islands.

5. Olives grow in the countries that border
   ----------on the Mediterranean Sea.
   ----------on the Black Sea.
   ----------on the Atlantic Ocean.

6. The most important domestic animal in the United States is the
   ----------horse.
   ----------cow.
   ----------donkey.

7. The United States is the richest of all the nations in the world in the supply of
   ----------coal.
   ----------silk.
   ----------gold.

8. Much copper is mined in
   ----------Colorado.
   ----------Montana.
   ----------Wyoming.

9. Crude turpentine is obtained from
   ----------pine trees in North Carolina.
   ----------petroleum.
   ----------the seed of the flax plant.

10. Grapes and mulberries grow plentifully in
    ----------Germany.
    ----------France.
    ----------England.

Part 5—No. right....; No. wrong....; Score=number right minus ½ number wrong.....

ASSIGNMENTS FOR THE SIXTEEN WEEKS OF THE EXPERIMENT

First Week

Topic: Scale of Miles, Direction and Shape of Earth

1. Measure the width and length of the top of your teachers desk. Draw a map of the teacher's desk showing the bookrack, globe and teacher's notebook. Draw a map $\frac{1}{2}$ the original size. Draw it $\frac{1}{4}$ the size.
2. Compose a little story telling the differences in the two sets of dolls in your textbooks. These are telling about the scale of miles and they are in figure 52 on page 39.
3. Tell about figures 53, 54, 55, and 56a in four sentences.
4. Draw a map of your classroom using the scale 1 inch = 24 feet.
5. How many miles to an inch are represented on the map of North America in your book?
6. Complete the exercise on page 42 of your book.
7. Complete "Things to Do or to Think About" at the bottom of page 47.
8. How would you say that your room is located? Name the rooms in the school that are on the northeast, northwest, southeast and southwest. What rooms are on the extreme north, south, east or west?
9. Read the report on the Compass in the book, Human Geography, by J. Russell Smith. Tell the class about the values of the compass and show a picture of one.

Second Week

Topic: The Round Map or Globe, Continents, Oceans, Hemispheres and Poles

1. On the blank outline map of the world write the names of the continents and oceans.
2. Write definitions of the following terms: globe, surface, ocean, island, hemisphere, poles and axis.
3. Draw and be able to name the seven continents on page 53.
4. Complete the exercises on page 53.
5. Tell the story of day and night.
6. What is the name of the axis which points to the north star?
7. Can you tell the story of Robert Peary and Richard Byrd?
8. Can you give a report of the two kinds of map on page 70?
9. Tell what the girl and boy are demonstrating on page 54.
10. Complete exercises 6, 7, 9, 10 and 11 on page 56.
11. Make up a little story about figure 77.
12. Draw the four hemispheres and put in the continents and oceans.
13. Carry out exercises 1, 2 and 3 on page 60.

Third Week

Topic: Latitude and Longitude, Zones

1. Make a scrapbook of different types of people and clothing from the hot, cold and temperate regions.

2. Make reports from the story of "Climates of the World" in the book Journeys through Our World by Stull and Hatch.
3. Draw the globe with the zones included.
4. Make a report on zones from the story "Telling Where Places Are" in Human Geography by J. Russell Smith.
5. What other words mean the same as parallels and meridians?
6. What do we call the lines that run from East to West and North to South on the map?
7. From where do we start counting our latitude and longitude degrees?
8. How do zones help us to locate places on the map?
9. Near what meridian and parallel is your city?
10. Why are longitude and latitude helpful?
11. Using the map of North America, fill in the following blanks: The _____ parallel passes through the Hudson Bay and Alaska. The Panama Canal is just South of the _____ parallel. The _____ meridian passes along the Eastern coast of Florida.
12. Complete the other exercises from J. Russell Smith's Human Geography, page 31.

Fourth Week

Topic: How People in North America Get Their Food, Shelter and Play Things

1. Bring to a class a report from Human Geography telling how North America differs from other continents.
2. How long would it take us to make a journey across the continent going one hundred miles an hour in an automobile?
3. What is the Atlantic Plain? Tell the class about it.
4. What do we meet as we travel across the continent after we have left the Atlantic Plain?
5. Tell about the ridges or mountain ranges.
6. Write stories telling about the Mississippi Valley, Sierra Nevadas and the Great Basin.
7. Name the high points of the continent going from East to West.
8. Name the countries of North America and tell about their climate.
9. Be able to name the North American neighbors.

Fifth Week

Topic: North Central States

1. What two foods are grown in this section? Tell why.
2. How are People in this section helped by the Great Lakes?
3. Do you know what states lead in the production of corn?
4. What happens to most of the corn that is produced in North America?
5. From where do we get most of our wheat?
6. What has caused the Lake Superior region to become the leading source of iron ore in the world?
7. Why are there so many large cities on the shores of the Great Lakes?
8. Opposite the following cities write the river on which it is located and its chief importance:

St. Paul	Kansas City
Minneapolis	St. Louis
Omaha	Pittsburgh

Sixth Week

Topic: Plateau States

1. Make a report on the Plateau States from Myer and Hamer, The Plateau States. Tell how they received their name and for what they are noted.
2. Name the rivers that rise in the Rocky Mountains.
3. Write a story about the picture: "A Shepherd and His Dog."
4. How have the mountains affected the lives of the people in this section of the country?
5. Would you like to read to the class the story of the Plateau States from Human Geography?
6. Make a map of the Plateau States showing the mountains, rivers, parks and large cities.
7. Bring some wool and cotton fibers to school. Twist them into threads. Which is harder to twist, wool or cotton?
8. Why are there so many national parks in this section?
9. What is a plateau? Why is that name given to these states?
10. Why are there so few people in Nevada?
11. How do people in this section earn a living?

Seventh Week

Topic: Pacific States

1. Name and bound each of the Pacific States. What are their capitals and important cities?
2. Draw a map showing the boundaries and the location of the principal cities.
3. List the principal things which these people produce and send to other places. Also list the things which they need and do not produce.
4. Make on the sand table a model of the Great Valley of California.
5. How does land near water affect the lives of people?
6. Reports on number 5 can be made from Human Geography and Baldwin's Discovery of the North West.
7. Name the minerals found in this section of the country and tell why they are important.
8. Why is lumbering so important in this section of the country?
9. Name as many ways that you are able to think of as to how this group of states is different from the North Central States.

Eighth Week

Topic: South Central States

1. Study and copy the cotton map in your Human Geography, page 116.
2. How does the Mississippi Valley help cotton in the Southern States?
3. Make a model of the Mississippi delta on the sandtable.
4. Make a chart of the cotton ports and the rivers near them.

One day of this week was used to administer the intermediate test.

Ninth Week

Topic: South and Middle Atlantic States

1. After you have studies the map try to name and bound each of the South and Middle Atlantic States. What are their capitals?
2. Name some seaport cities of this group. What would be shipped from their wharves?
3. What in the South Atlantic is in no state at all? Why is it so important?
4. Why is the Atlantic coast so irregular? Why are Cape Fear and Cape Lookout so named? What has the U. S. Government done to decrease danger at these capes?
5. Why does Boston send to Norfolk for coal? Do you think that there is a lighthouse at Key West, Florida? Why?
6. For what are the South Atlantic States noted? Why?
7. Why are there so many high buildings in New York?
8. Why was it necessary to build the Erie Barge Canal? What waters does it connect?
9. Which burns with less smoke, hard coal or soft coal? Why is Pittsburgh called the smoky city? For what is Philadelphia noted?
10. Fill in the outline map with all the states of the United States.

Tenth Week

Topic: A Wet Hot Region--The Amazon Basin
Source: World Folk by J. R. Smith

Pages		Exercises
80	Numbers	3 and 5
85		1, 2, 4, 5, and 7
88		1, 2, 3, and 4
91		3
92		2, 3, 4, and 5
94		1, 2, 3, and 4
98		1, 2, 3, 5, 6, and 7

Eleventh Week

Topic: Amazon Basin

1. Copy the names of the countries of South America and arrange them in alphabetical order.
2. Write sentences about the animals which we've studied that live in the Amazon Basin.
3. Do exercises 3, 4, and 5 on Page 92 of the text.
4. Draw a map of South America.
5. Do exercises 2, 3, 4, and 5 on page 99.

Twelfth Week

Basic Text

Complete the exercises on the following pages: 102, nos. 1, 2, and 5; 108,

nos. 5, 7, and 8; 112, nos. 1 and 3; 115, nos. 1, 2, and 4; 118, nos. 1, 2, 3, 4, 5, and 7, 8, and 9.

Thirteenth and Fourteenth Weeks

Topic: Countries of Europe

1. On the map trace our trip from New York to Switzerland.
2. How long does it take us to reach there?
3. To what city do we go before reaching Switzerland? On what river is it?
4. Why do we change to a river boat at Rotterdam?
5. Name three things that we see as we travel down the Rhine to Switzerland? How is this different from the Amazon Basin?
6. How is Europe different from our country?
7. What is the name of the city where we stop in Switzerland?
8. Why do so many Americans go to Switzerland for vacations every year?
9. Why are there so many plateaus in Switzerland?
10. Name the high mountains, lakes and rivers of Switzerland.
11. Why is the weather so cold there?
12. Where are most of the roads in Switzerland?
13. What is an alpenstock?
14. What is one of the occupations of the Swiss? Why do they go up the mountains in the spring?
15. What is an avalanche?
16. Why are there so many factories in Switzerland?
17. What is one thing that the people manufacture?
18. Name some sports of the Swiss children.
19. Give a good description of the Swiss people.

Fifteenth and Sixteenth Weeks

Topic: Holland and Switzerland

1. Draw the map of Europe. Put in the countries and their national capitals.
2. Draw a map of Switzerland and show the principal cities, lakes and rivers.
3. Compare Switzerland and the Netherlands in size, type of work, climate, and surface of land.
4. What do we mean by the word Netherlands? What people live in the Netherlands? By what other name is the country sometimes known?
5. What is a delta? The Netherlands is like what other land that you have studied?
6. Draw a windmill and tell how they are used in Holland. Tell what each of these is: dike, polder, dune, ditch swamp and breakwater.
7. Why do you think that the Rhine, Amazon and Mississippi Rivers have deltas and the Congo has none?
8. Are the people of the Netherlands more or less healthy than the people of the Amazon Basin? Give good reasons why.
9. Why do we study about the Dutch people in the spring? Tell about the plants of Holland.

Topic: The Mediterranean Countries

1. What is meant by the word Mediterranean?
2. What countries of Europe are touched by this sea? Of Africa?
3. What people gave this sea its name? Why was it so called?
4. Why did individuals dread this sea?
5. How was the compass helpful in meeting this problem?
6. Name two things that Rome and Greece gave to civilization.